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SESSIONAL PAPERS

VOLUME 7

FIRST SESSION OF THE THIRTEENTH PARLIAMENT

OF THE

DOMINION OF CANADA

SESSION 1918

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2. The Public Accounts of Canada, for tht fiscal year ended 31st March, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.. .. .. ..*Printed for distribution and sessional papers.*

3. Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1919, and, in accordance with tht provisions of "The British North America Act, 1867." Presented by Hon. Mr. Maclean, March 22, 1918.
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4. Supplementary Estimates of sums required for the service of the Dominion for the year ending on tht 31st March, 1918, and, in accordance with the provisions of "The British North America Act, 1867." Presented by Hon. Mr. Maclean, May 18, 1918.
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5. Supplementary Estimates of sums required for the service of the Dominion for the year ending on the 31st March, 1919, and in accordance with the provisions of "The British North America Act, 1867." Presented by Hon. Mr. Maclean, May 20, 1918.
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8. Report of the Superintendent of Insurance for the year 1917. (Vol. II.)
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9. Abstract of Statements of Insurance Companies in Canada for the year ended 31st December, 1917. (Subject to corrections.) Presented by Hon. Mr. Maclean, May 13, 1918.

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10. Annual Report of the Trade of Canada (Imports for Consumption and Exports), for the fiscal year ended 31st March, 1917. Presented by Sir George Foster, May 22, 1918.
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10*a*. Report relating to Mail Subsidies and Steamship Subventions as controlled by the Department of Trade and Commerce, for the fiscal year ending 31st March, 1917, with Traffic Returns, etc., to 31st December, 1917. Presented by Sir George Foster, May 17, 1918.
Printed for distribution and sessional papers.

10*b*. Report of the Trade and Commerce Department. Grain Statistics for the fiscal year 1916, and the Report of the Board of Grain Commissioners.
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10*c*. Criminal Statistics for the year ended September, 1917.
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11. Report of the Department of Customs containing the tables and statements of Imports and Exports of the Dominion of Canada for the fiscal year ended 31st March, 1917. Presented by Hon. Mr. Sifton, March 26, 1918.
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11*a*. Shipping Report of the Department of Customs, containing the statements of Navigation and Shipping of the Dominion of Canada, for the fiscal year ended 31st March, 1917. Presented by Hon. Mr. Sifton, March 26, 1918.
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12. Inland Revenue, Annual Report, Part I—Excise. The Senate.
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13. Inland Revenue, Annual Report, Part II—Weights and Measures, Gas and Electricity. The Senate.. .. ..*Printed for distribution and sessional papers.*

14. Inland Revenue—Part III—Adulteration of Food. The Senate.
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15. Report of the Minister of Agriculture for the Dominion of Canada, for the year ended 31st March, 1917. Presented by Hon. Mr. Crerar, March 25, 1918.
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15*b*. Report of the Veterinary Director General for the year 1917.
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15*c* Report on "The Agricultural Instruction Act," 1916-17, pursuant to Section 8, Chapter 5 of 3-4 George V. Presented by Hon. Mr. Crerar, March 25, 1918.
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20. Annual Report of the Department of Railways and Canals, for the fiscal year from 1st April, 1916, to 31st March, 1917. Presented by Hon. Mr. Reid, March 27, 1918.
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20*a*. Canal Statistics for season of navigation, 1917.
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20*b*. Railway Statistics for the Dominion of Canada, for the year ended 30th June, 1917.
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20*c*. Twelfth Report of the Board of Railway Commissioners for Canada, for the year ending 31st March, 1917. Presented by Hon. Mr. Reid, March 25, 1918.
Printed for distribution and sessional papers.

20*d*. Telephone Statistics of the Dominion of Canada, for the year ended 30th June, 1917. Presented by Hon. Mr. Reid, March 25, 1918.
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21. Fiftieth Annual Report of the Department of Marine and Fisheries, for the year 1916-17—Marine. Presented by Hon. Mr. Ballantyne, March 20, 1918.
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22. List of shipping issued by the Department of Marine and Fisheries, being a list of vessels on the Registry Books of the Dominion of Canada, on the 31st of December, 1917.
Printed for distribution and sessional papers.

23. Supplement to the Fiftieth Annual Report of the Department of Marine and Fisheries (Marine)—Steamboat Inspection Report..*Printed for distribution and sessional papers.*

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24. Report of the Postmaster General for the year ended 31st March, 1917. Presented by Hon. Mr. Doherty, March 27, 1918.. .. .. ..*Printed for distribution and sessional papers.*

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25. Annual Report of the Department of the Interior, for the fiscal year ending 31st March, 1917. Presented by Hon. Mr. Meighen, March 27, 1918.
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25*c*. Sixteenth Report of the Geographic Board of Canada, for the year 1917.
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27. Report of the Department of Indian Affairs for the year ended 31st March, 1917. Presented by Hon. Mr. Calder, March 27, 1918.. ..*Printed for distribution and sessional papers.*

28. Report of the Royal Northwest Mounted Police, 1917. Presented by Hon. Mr. Rowell, 2nd April, 1918.. .. ..*Printed for distribution and sessional papers.*

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33. Report of the Secretary of State for External Affairs, for the year ended 31st March, 1917. Presented by Sir Robert Borden, May 8, 1918.
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36. Report of the Department of Labour for the fiscal year ending 31st March, 1917. Presented by Hon. Mr. Crothers, March 26, 1918... ..*Printed for distribution and sessional papers.*

36*a*. Tenth Report of the Registrar of Boards of Concilliation and Investigation under "The Industrial Disputes Investigation Act, 1917," for the fiscal year of 1917.
Printed for distribution and sessional papers.

38. Report of the Department of the Naval Service, for the fiscal year ending 31st March, 1917. Presented by Hon. Mr. Ballantyne, March 19, 1918.
Printed for distribution and sessional papers.

38*a*. Supplement to the Seventh Annual Report of the Department of the Naval Service (Fisheries Branch). Contributions to Canadian Biology, being studies from the Biological Stations of Canada, 1916-17.. .. ..*Printed for distribution and sessional papers.*

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40. The Report of the Joint Librarians of Parliament. Presented by Hon. The Speaker, March 18, 1918.. .. ..*Not printed.*

41. Minute of Council appointing the Honourable Martin Burrell, Secretary of State; the Honourable John Dowsley Reid, Minister of Railways and Canals; the Honourable Arthur L. Sifton, Minister of Customs, and the Honourable James A Calder, Minister of Immigration and Colonization, to act with the Speaker of the House of Commons, as Commissioners for the purposes, and under the Provisions of the Eleventh Chapter of the Revised Statutes of Canada, 1906, intituled: "An Act respecting tre House of Commons." Presented by Sir Robert Borden, March 18, 1918.. .. .. ..*Not printed.*

42. Copies of Orders in Council, as follows:—

P.C. 987, dated 10th April, 1917.—Defence of Canada Order, 1917. Regulations, penalties, etc.

P.C. 1397, dated 21st May, 1917.—Regulations *re* persons employed on docks, etc. carrying matches, smoking, etc., prohibited.

P.C. 1451, dated 25th May, 1917.—Further penalties under Defence of Canada

P.C. 2277, dated 17th August, 1917.—*Re* Desertions from merchant vessels; penalties, etc.

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P.C. 91, dated 15th Janury, 1918.—Regulations providing that all British ships, 1,600 tons or over, trading to Europe and the Mediterranean must have wireless apparatus, etc.

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P.C. 524, dated 2nd of March, 1918, in substitution of Regulation Fifty-one, respecting penalties for refusing to obey any orders or rules issued under the provisions of the Defence of Canada Order, 1917.

P.C. 558, dated 8th of March, 1918, amending P.C. 987, dated 10th April, 1917.—Regulation respecting the employment of look-outs on merchant vessels of 2,500 gross tonnage and upwards.

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42*a*. Copies of Orders in Council, as follows:—

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P.C. 86, dated 15th January, 1918.—"Defence of Canada Order, 1917," coaling of vessels.

P.C. 87, dated 17th January, 1918.—"Defence of Canada Order, 1917," export of firearms.

P.C. 91, dated 15th January, 1918.—"Defence of Canada Order, 1917," radiotelegraph equipment on vessels.

P.C. 261, dated 1st February, 1918.—Carrying of explosives on passenger trains.

P.C. 329, dated 8th February, 1918.—Rates of pay R.N,C,V,R,

P.C. 387, dated 20th February, 1918.—Allowance to officers and men travelling on duty.

P.C. 462, dated 2nd March, 1918.—Treatment of insane members of the naval service.

P.C. 524, dated 2nd March, 1918.—"Defence of Canada Order, 1917," enforcement of provisions.

P.C. 2769, dated 4th October, 1917.—Amendment to "Defence of Canada Order, 1917," *re* lights on vessels.

P.C. 2791, dated 9th October, 1917.—Retention of services of men in the R.N.C.V.R. after termination of the war.

P.C. 3017, dated 3rd December, 1917.—Amendment to "Defence of Canada Order, 1917," *re* carriage of explosives in merchant ships.

P.C. 3064, dated 2nd November, 1917.—Rates of pay to officials officiating at courts martial and disciplinary courts for the Royal Canadian Navy.

P.C. 3072, dated 6th Nopember, 1917.—Regulations governing the issue of war badges.

P.C. 3192, dated 13th November, 1917.—Rates of pay on discharge to men not eligible for three months' gratuity.

P.C. 3306, dated 29th November, 1917.—Amendment to "Defence of Canada Order, 1917,"*re* communicating information with regard to the movements of ships.

P.C. 3307, dated 29th November, 1917.—Amendment to "Defence of Canada Order, 1917," *re* release of imprisoned seamen.

P.C. 3319, dated 29th November, 1917.—Amendment to "Defence of Canada Order, 1917," *re* carrying of matches in the vicinity of inflammable substances.

P.C. 3362, dated 24th December, 1917.—Amendment to "Defence of Canada Order, 1917," *re* transportation of explosives on passenger trains.

P.C. 3391, dated 24th December, 1917.—Retention of services of men in the Royal Canadian Navy after the termination of the war.

P.C. 3392, dated 22nd December, 1917.—Institution of rank of commander, R.N. C.V.R.

P.C. 3470, dated 26th December, 1917.—Institution of warrant ranks, Royal Canadian Navy.

P.C. 3474, dated 27th December, 1917.—Rates of pay to paymasters, R.N.C.V.R.

P.C. 3475, dated 5th January, 1918.—Separation allowance.

P.C. 558, dated 8th March, 1918.—Look-outs on merchant vessels.

P.C. 560, dated 8th March, 1918.—Admitting United States vessels to privileges in Canadian ports. Presented by Hon. Mr. Ballantyne, March 19, 1918.....*Not printed.*

42*b*. Copy of Order in Council, P.C. 863, dated 12th April, 1918; amendments of "Defence of Canada Order, 1917."—Equipment of ships for protection against the enemy. Presented by Hon. Mr. Ballantyne, April 19, 1918.. .. ..*Not printed.*

42*c*. Copy of Order in Council P.C. 950, dated 19th of April, 1918.—Establishment of the rank of warrant writer in the R.N.C.V.R. Also,—Copy of Order in Council P.C. 70/942, dated 19th April, 1918.—Allowance to chief examining officers at Canadian naval ports. Presented by Hon. Mr. Ballantyne, April 24, 1918.. .. ..*Not printed.*

42*d*. Copy of Order in Council, P.C. 974, dated 23rd April, 1918. "Defence of Canada Order, 1917,"—Entry in Canada of vessels carrying explosives in self defence. Also, Copy of Order in Council, P.C. 957, dated 19th April, 1918.—Institution of the rank of surgeon probationer, Royal Naval Canadian Volunteer Reserve. Presented by Hon. Mr. Ballantyne, May 1, 1918.. .. ..*Not printed.*

42*e*. Order in Council No. P.C. 1102, dated 10th May, 1918.—Amendments of "Defence of Canada Order, 1917," Section 23*c*, *re* fitting and supplying vessels registered in Canada with defensive armaments. Order in Council No. P.C. 1129, dated 11th May, 1918.—Amendments of "Defence of Canada Order of 1917," Section 22A. *re* ships' lights. (*The Senate*).. .. ..*Not printed.*

42*f*. Copy of Order in Council No. P.C. 1208, dated 17th May, 1918, *re* allowances to officers appointed for navigating duties in H.M.C. ships. Presented by on. Mr. Ballantyne, May 23, 1918.. .. ..*Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

43. P.C. 632, dated 14th March, 1918, respecting the increase in freight and passenger rates on Canadian railways. P.C. 631, dated 14th March, 1918, respecting the collection of special taxes from the Canadian Pacific Railway Company. Presented by Sir Robert Borden, March 18, 1918.. .. .. .

CONTENTS OF VOLUME 14—*Continued.*

51. P.C. 358, dated 13th February, 1918.—Regulations *re* appointments to the Public Service.

P.C. 491, dated 28th February, 1918.—Respecting appointments, promotions, etc., in the Civil Service other than in the several departments.

P.C. 372, dated 18th February, 1918.—Appointment of a Committee of Council *re* preparation of a Bill respecting the Civil Service.

P.C. 548, dated 15th March, 1918.—Approval of Interim Regulations made by the Civil Service Commission, under clause 3 of O.C. P.C. 358, dated 13th February, 1918.

P.C. 637, dated 18th March, 1918.—Regulations *re* dismissal of public officials on the ground of offensive partisanship during the recent election. Presented by Sir Robert Borden, March 18, 1918.. .. .. .

CONTENTS OF VOLUME 14—*Continued.*

P.C. 3025, dated 20th October, 1917.—Regulations *re* reporting for service and claims for exemption for men residing outside of Canada.

P.C. 3033, dated 23rd October, 1917.—Convention Great Britain and United States calling out for military service under its own colours its citizens resident in the other country.

P.C. 3036, dated 23rd October, 1917.—*Re* exemption of members of the R.N.W.M. Police.

P.C. 3093, dated 2nd November, 1917.—Clerk of Central Appeal Judge—J. L. McDougall—at salary of $250 a month.

P.C. 3095, dated 2nd November, 1917.—Expenses of Military Service Branch to be paid from War Appropriation.

P.C. 3112, dated 2nd November, 1917.—Expenses of Judges *re* making appointments to local tribunals.

P.C. 3118, dated 7th November, 1917.—Further regulations under Military Service Act, 1917.

P.C. 3168, dated 9th November, 1917.—Regulations *re* dealing with deserters and absentees without leave, etc.

P.C. 3169, dated 9th November, 1917.—Regulations *re* claims for exemptions by persons who have failed to comply with Proclamation under Military Service Act, 1917.

P.C. 3230, dated 19th November, 1917.—Regulations fixing penalties for non-compliance with the law.

P.C. 3231, dated 19th November, 1917.—*Re* applications for exemption in North-west Territories and other remote regions.

P.C. 3232, dated 19th November, 1917.—J. H. Moss authorized to sign requisitions for printing and stationery for use of Military Service Council.

P.C. 3283, dated 27th November, 1917.—Regulation *re* repatriation of citizens or subjects of Allied countries resident in Canada.

P.C. 3285, dated 27th November, 1917.—Minister of Justice authorized to designate a Judge to perform duties assigned to Chief Justice *re* appeal tribunals in case of a vacancy in said office.

P.C. 3298, dated 29th November, 1917.—Registrars and Deputy Registrars, remuneration of.

P.C. 3321, dated 30th November, 1917.—Regulations *re* appeal to Central Judge from decisions of tribunals.

P.C. 3344, dated 3rd December, 1917.—*Re* hearing of appeals as speedily as possible.

P.C. 3348, dated 3rd December, 1917.—*Re* discharge from military service of persons engaged in agriculture.

P.C. 3349, dated 3rd December, 1917.—Minister of Agriculture authorized to appoint representatives of Department of Agriculture to attend tribunals.

P.C. 3356, dated 8th December, 1917.—Remuneration of representatives of the Minister of Agriculture ($5 per diem).

P.C. 3463, dated 24th December, 1917.—Regulations *re* departure out of Canada of male persons, made by O.C. May 24, 1917, amended.

P.C. 33, dated 7th January, 1918.—Regulations *re* establishment of additional tribunals to decide appeals.

P.C. 35, dated 7th January, 1918.—Regulations; remuneration and expenses of tribunals.

P.C. 70, dated 8th January, 1918.—Regulations respecting men changing residence.

P.C. 54, dated 8th January, 1918.—Enlargement of Dominion Police Force in connection with administration of the Military Service Act.

P.C. 111, dated 17th January, 1918.—Regulations *re* exemption of Indians and other disfranchised British subjects, from Military Service.

P.C. 115, dated 17th January, 1918.—Regulations prescribing obligations of exempted men under the Military Service Act.

P.C. 116, dated 17th January, 1918.—Appointment of Douglas Kerr as Commissioner of Police to enforce Military Service Act.

P.C. 178, dated 21st January, 1918.—Regulations *re* appeal claims for exemption under the Military Service Act, 1917.

P.C. 181 dated 26th January, 1918.—Regulations *re* furnishing of information by employers of employees liable for Military Service.

P.C. 182, dated 26th January, 1918.—Regulations *re* reporting for military duty in case of an appeal for exemption.

P.C. 195, dated 24th January, 1918.—Extension of time for appeals from decisions of local tribunals.

P.C. 196, dated 26th January, 1918.—Regulations *re* appeals from the grants of exemption by tribunals—production of foodstuffs.

P.C. 237, dated 30th January, 1918.—Liability to Military Service of United States citizens in Canada, and Candian British subjects in the United States.

P.C. 271, dated 2nd February, 1918.—Regulations *re* hearing of appeals in the Province of Quebec.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 384, dated 18th February, 1918.—Appointment of an agricultural representative for each Military District to act as adviser to the Leave of Absence Boards.

P.C. 435, dated 23rd February, 1918.—Accepting resignation of Mr. Glyn Osler, K.C., as Register under the Military Service Act, at Toronto, and appointing Mr. C. Leslie Watson, Registrar for Ontario.

P.C. 450, dated 2nd March, 1918.—Constitution of a Directorship under the Military Service Act, 1917; and appointing Lt.-Col. H. A. C. Machin, to the said office.

P.C. 451, dated 23rd February, 1918.—Use of certain of the Judges of the Circuit Court of the District of Montreal for the determination of appeals under the Military Service Act, 1917

P.C. 452, dated 23rd February, 1918.—Accepting the resignation of Mr. E. R. Chapman, Registrar under the Military Service Act for Manitoba, and appointing Mr. George A. Toole to succeed him.

P.C. 572, dated 9th March, 1918.—Application of the provisions of the Canadian Military Service Act, 1917, to aliens of allied nationality resident in Canada. (Copy of the Military Service Act, 1917, attached.) . . . . . *Not printed.*

53a. Copies of Orders in Council—

P.C. 815, dated 4th April, 1918.—Regulations, under the War Measures Act, 1914, in respect to the utilization of the human energy of Canada for purposes essential to the prosecution of the present war.

And P.C. 834, dated 4th April, 1918.—Conferring certain powers on the General Officer or the Officer Commanding Military Districts, in case of riot, insurrection or civil disturbance, or obstructing the enforcement of the Military Service Act, 1917, etc. Presented by Sir Robert Borden, April 5, 1918. . . . . *Not printed.*

54. Copies of Orders in Council, as follows—

P.C. 3160, dated 9th November, 1917.—Regulations *re* appointment of a Director of Public Information.

P.C. 3161, dated 9th November, 1917.—Appointing Mark E. Nichols, Esq., Director of Public Information. Presented by Hon. Mr. Rowell, March 18, 1918. . . *Not printed.*

55. Copy of the Minutes of the meetings of the Conference between the Dominion and Provincial Governments of Canada, held at Ottawa, during February, 1918, respecting the general war situation as concerned with financial, food, shipping, and military necessities. Presented by Hon. Mr. Calder, March 18, 1918. . . . . *Printed for sessional papers only.*

56. Copies of Orders in Council, as follows—

P.C. 1460, dated 16th June, 1917.—Regulations for appointment of Food Controller.

P.C. 1684, dated 21st June, 1917.—Appointment of Hon. W. J. Hanna as Food Controller.

P.C. 1844, dated 3rd July, 1917.—Staff, office of Food Controller; appointment of Todd, Willison and French.

P.C. 2079, dated 1st August, 1917.—Franking privilege extended to Food Controller.

P.C. 2190, dated 9th August, 1917.—Regulations applicable to public eating places and use of wheat for alcohol prohibited; penalties imposed, etc.

P.C. 2210, dated 11th August, 1917.—Food Controller's Office; $25,000 for salaries and expenses of.

P.C. 2292, dated 18th August, 1917.—Export of flour prohibited.

P.C. 2333, dated 23rd August, 1917.—Food Controller's Office; appointment of officers, clerks and others; authority to make such appointments, fix salaries, etc.

P.C. 2352, date 24th August, 1917.—Canned vegetables; prohibition of use of while fresh vegetables are available.

P.C. 2730, dated 3rd October, 1917.—Franking privilege to secretaries of Provincial Committee of Food Controller's Office.

P.C. 2689, dated 8th October, 1917.—Food Control; Educational Bureau; appointments.

P.C. 2688, dated 11th October, 1917.—Regulations *re* wholesale producers and dealers. Must make returns, etc.

P.C. 2959, dated 19th October, 1917.—Cereal foods. Regulations *re* sale of.

P.C. 2959 (a), dated Extra Canada Gazette, 25th October, 1917.—Order of Food Controller extending time for commencement of Cereal Food Regulations.

P.C. 3044, dated 23rd October 1917.—Oleomargarine; Regulations *re* importation and sale of.

P.C. 3116, dated 2nd November, 1917.—Use of grain for distillation of potable liquors, prohibited.

P.C. 3141, dated 6th November, 1917.—$70,000 for expenses office of Food Controller.

P.C. 3211, dated 15th November, 1917.—Export of foodstuffs; prohibition of.

P.C. 3214, dated 15th November, 1917.—Licensing of dealers in food, etc. Regulations *re*. Food Controller authorized to fix profits, etc.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 3223, dated 15th November, 1917.—Licensing of mills for the grinding of flour; regulations *re*.

P.C. 3215, dated 19th November, 1917.—Food Controller's Office; $100,000 for salaries and other expenses in.

P.C. 3236, dated 19th November, 1917.—Oleomargarine; Regulations *re* handling of; Licenses for importation of to be issued from Office of Veterinary Director General.

P.C. 3236 (a), dated 2nd Extra Canada Gazette, 17th November, 1917.—Order of Food Controller *re* manufacture, importation and sale of oleomargarine.

P.C. 3239, dated 19th November, 1917.—Food Control Regulations framed by Food Controller *re* licenses for exportation of goods to allied countries, etc., approved.

P.C. 3203, dated 27th November, 1917.—Manufacture of malt; regulations *re*.

P.C. 3347, dated 3rd December, 1917.—Prohibition of export of certain foods to the United Kingdom, British possessions, etc., except under license from Minister of Customs.

P.C. 3430, dated 24th December, 1917.—Food Control Regulations *re* cars containing food being held for longer period than four days, etc.

P.C. 163, dated 19th January, 1918.—$50,000 for expenses of Food Controller's office.

P.C. 180, dated 21st January, 1918.—Regulations *re* licensing flour mills made by Order in Council 3223, 15th November, 1917, to extend to all flour mills.

P.C. 200, dated 24th January, 1918.—Resignation, Hon. W. J. Hanna as Food Controller.

P.C. 53, dated 26th January, 1918.—Regulations *re* exportation of certain goods.

P.C. 212, dated 26th January, 1918.—Staff, office of Food Controller. Former Orders in Council *re* cancelled, and Food Controller authorized to appointment of certain members of.

P.C. 223, datel 4th February, 1918.—Appointment Mr. H. B. Thomson as Food Controller *vice* Hon. W. J. Hanna.

P.C. 344, dated 11th February, 1918.—Canada Food Board.

P.C. 345, dated 11th February, 1918.—Appointment members of Canada Food Board: Messrs. Thomson, Dunning and McGregor.

P.C. 370, dated 12th February, 1918.—Regulations *re* Public Eating Places. O.C., 9th August, 1917, amended.

P.C. 420, dated 26th February, 1918.—Amending O.C. of February 11, 1918, creating The Canada Food Board—Powers not to include any of the powers or duties vested in the Board of Grain Supervisers for Canada.

P.C. 470, dated 28th February, 1918.—Prohibiting removal of flint or dent corn from the counties of Lambton, Essex, Kent and Elgin to any place outside of said district.

P.C. 543, dated 7th March, 1918.—Regulations *re* use of grain for feed purposes in stock yards, etc.

P.C. 567, dated 8th March, 1918.—Placing of sums of money to the credit of the Canada Food Board for the purchase of Ford tractors.

P.C. 580, dated 9th March, 1918.—Regulations *re* licensing of packing houses—Limitation of profit of sales.

P.C. 596, dated 12th March, 1918.—Regulations *re* power of The Canada Food Board to make orders regarding the kinds and amounts of foods that may be used, etc.

P.C. 597, dated 12th March, 1918.—Regulations forbidding the wilful waste of any food or food products; penalties imposed, etc. . . . . *Not printed.*

56*a*. Report of the Food Controller, Hon. W. J. Hanna, K.C., to the Prime Minister, dated 24th January, 1918. Presented by Sir Robert Borden, Mach 27, 1918. . . . . *Not printed.*

56*b*. Return to an Order of the House of the 20th March, 1918, for a return showing—1. When and upon whose recommendation the office of Food Controller in Canada was authorized and established. 2. To which Ministerial Department the Food Controller reports, and what member of the cabinet, if any, is responsible for the administration of the office of Food Controller. 3. The total amount incurred as salaries for Food Controller and his assistants and staff at Ottawa and throughout Canada from the establishment of the office up to and including end of February, 1918. 4. The total expense of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishing, equipment, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephones, postage, and all other expenses of Food Controller's Office, Ottawa, and branch offices throughout Canada, since the establishment of the office, up to and including February, 1918. 5. The total cost of administration of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishings, equipments, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephones, postage, etc., including all and every expense of Food Controller's Office at Ottawa and branch offices throughout Canada for each of following months, viz.: December, 1917, and February, 1918. 6. Whether there are any claims for salary or expenses from the Food Controller's Office outstanding or in dispute; if so, the amount involved. 7. How many employees there are on the Food Controller's staff at Ottawa and throughout Canada. 8. How many of the employees are returned soldiers who have been on active service since 1914. Presented April 18, 1918.—*Mr. Lapointe (St. James)* . . . . . *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

56*c*. Return to an Address to His Excellency the Governor General of the 20th March, 1918, for a copy of the Order in Council recently passed making provision for the staff, the number of persons to be employed and their salaries, in the Food Controller's Office. Also a list of the names of those at present employed, showing their respective salaries and duties, former occupations, where formerly employed and salary received in former occupation. Presented April 18, 1918.—*Mr. Devlin*.. .. ..*Not printed.*

56*d*. Return to an Address to His Excellency the Governor General, of the 27th March, 1918, for a copy of the Orders in Council creating the Canada Food Board, and all correspondence antecedent or posterior to the Order in Council with respect to the same, as well as all regulations not already brought down. Presented May 20, 1918.—*Sir Wilfrid Laurier*.. .. ..*Not printed.*

56*e*. Supplementary return to an Order of the House of the 20th March, 1918, for a return showing—1. When and upon whose recommendation the office of Food Controller in Canada was authorized and established. 2. To which Ministerial Department the Food Controller reports, and what member of the cabinet, if any, is responsible for the administration of the office of Food Controller. 3. The total amount incurred as salaries for Food Controller and his assistants and staff at Ottawa and throughout Canada from the establishment of the office up to and including end of February, 1918. 4. The total expense of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishing, equipment, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephones, postage, and all other expenses of Food Controller's Office, Ottawa, and branch offices throughout Canada, since the establishment of the office, up to and including February, 1918. 5. The total cost of administration of Food Controller's Office at Ottawa and throughout Canada, including rents, furnishings, equipments, heat, light, salaries, travelling expenses, stationery, printing, advertising, telegrams, telephone, postage, etc., including all and every expense of Food Controller's Office at Ottawa and branch office throughout Canada for each of following months, viz.: December, 1917, and February, 1918. 6. Whether there are any claims for salary or expenses from the Food Controller's Office outstanding or in dispute; if so, the amount involved. 7. How many employees there are on the Food Controller's staff at Ottawa and throughout Canada. 8. How many of the employees are returned soldiers who have been on active service since 1914. Presented May 20, 1918.—*Mr. Lapointe (St. James)*.. .. ..*Not printed.*

57. Copies of Orders in Council, as follows:—

P.C. 1579, dated 11th June, 1917.—Fuel Controller.—Report on coal situation and appointment of Chas. A. Magrath as.

P.C. 1651, dated 15th June, 1917.—Fuel Controller vested with powers under Inquiries Act.

P.C. 1862, dated 6th July, 1917.—Fuel Controller; $10,000 allocated from War Appropriation.

P.C. 1887, dated 12th July, 1917.—Fuel Controller.—Report on coal situation and appointment of Chas. A. Magrath as.

P.C. 2060, dated 27th July, 1917.—Assistant Fuel Controller. Appointment of H. P. McCue as.

P.C. 2289, dated 22nd August, 1917.—Fuel Control. Appointment of Donald S. Kerr to assist and C. W. Paterson as Deputy Fuel Controller.

P.C. 2611, dated 19th September, 1917.—"David S. Kerr" instead of "Donald S. Kerr" (O.C. 22nd August, 1917—P.C. No. 2289, amended).

P.C. 3068, dated 26th October, 1917.—Regulations *re* importation and sale of coal.

P.C. 105/3341, dated 3rd December, 1917.—Salary of Deputy Fuel Controller, C. W. Peterson, fixed at $500 per month

P.C. 285, dated 4th February, 1918.—Duties of Fuel Controller; O.C. 12th July, 1917.—P.C. 1887, defining, amended

P.C. 298, dated 5th February, 1918.—Fuel Regulation. Providing for heatless days in factories, theatres, etc.

P.C. 325, dated 11th February, 1918.—Powers of Fuel Controller extended.

Sir George Foster laid on the Table, by Command of His Excellency,—Copies of Orders in Council, as follows:—

P.C. 359, dated 20th February, 1918.—Regulations providing for the conservation of fuel necessary to the national security.

P.C. 564, dated 8th March, 1918.—Amending regulations *re* conservation of fuel as regards the closing of golf, country, yacht, canoe or hunt clubs and places of amusement on certain days. Presented by Sir George Foster, March 19, 1918...*Not printed.*

58. Annual Report of the Editorial Committee on Government Publications, on its operations from the date of its appointment, 4th October, 1917, to 20th March, 1918. Presented by Sir George Foster, April 24, 1918.. ..*Printed for distribution and sessional papers.*

58*a*. P.C. 2729, dated 4th October, 1917.—Establishment of Editorial Committee *re* printing of public documents. Presented by Sir George Foster, March 19, 1918.

Printed for sessional papers only.

CONTENTS OF VOLUME 14—*Continued.*

59. P.C. 337, dated 8th February, 1918.—Constitution of a Sub-Committee of the War Committee of the Cabinet to be known as The War Trade Board. Presented by Sir George Foster, March 19, 1918.. .. ..*Not printed.*

59*a*. Return to an Address to His Excellency the Governor General of the 20th March, 1918, for a copy of all Orders in Council creating the War Trade Board, appointments to the same, instructions, and reports from the Board to this date. Presented by Sir Wilfrid Laurier, April 4, 1918.. .. ..*Not printed.*

60. Statement of Governor General's Warrants issued since the last Session of Parliament on account of 1917-18. Presented by Hon. Mr. Maclean, March 20, 1918.....*Not printed.*

61. Statement of receipts and expenditures of the National Battlefields Commission to 31st March, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.. .. ..*Not printed.*

62. Statement showing distribution of the $25,000,000 advanced by the Dominion Government to the Canadian Northern Railway and its constituent companies, as provided for in Chapter 24, Statutes of 1917. Presented by Hon. Mr. Maclean, March 20, 1918.
Not printed.

62*a*. Return showing:—1. What sums, if any, have been paid since the first day of August, 1917, to the Canadian Northern Railway or to any person, firm, corporation, bank or company in trust for and on behalf of the Canadian Northern. 2. Under what authority these sums have been paid. 3. If by virtue of Orders in Council, the date of each of said Orders in Council, and the amount authorized by each of said Orders, and so paid. Presented March 27, 1918.—*Mr. Verville*.. .. ..*Not printed.*

63. Statement of the Receipts and Expenditures of the Royal Society of Canada, for the year ended April 30, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.. ..*Not printed.*

64. Interim Report of R. A. Pringle, K.C., Commissioner inquiring into the manufacture, sale, price and supply of news print in Canada. Presented by Hon. Mr. Maclean, March 20, 1918.. .. ..*Not printed.*

64*a*. Return to an Address to His Excellency the Governor General of the 8th April, 1918, for a copy of the Order in Council creating a paper commission, and also a copy of the subsequent Orders in Council in regard to the work of this Commission. Presented April 18, 1918.—*Mr. Devlin*.. .. ..*Not printed.*

64*b*. Return to an Order of the House of the 8th April, 1918, for a copy of all correspondence respecting Orders in Council creating a paper commission, and subsequent Orders in Council respecting the same, which have passed between newspaper publishers in Canada, more particularly those publishers in Toronto, and the Government. Presented April 25, 1918.—*Mr. Devlin*.. .. ..Not printed.

65. Report and Statement of Receipts and Expenditures of the Ottawa Improvement Commission to March 31, 1917. Presented by Hon. Mr. Maclean, March 20, 1918.
Not printed.

66. Statement of Superannuation and Retiring Allowances in the Civil Service during the year ending 31st December, 1917, showing name, rank, salary, service allowance and cause of retirement of each person superannuated or retired, also whether vacancy has been filled by promotion, or by appointment, and the salary of any new appointee. Presented by Hon. Mr. Maclean, March 20. 1918.. .. ..*Not printed.*

67. Report of Women's War Conference, called by the War Committee of the Cabinet, at Ottawa, February 28th to March 2nd, 1918. Presented by Hon. Mr. Rowell, March 20, 1918.. .. ..*Not printed.*

68. Statement of Expenditure on account of "Miscellaneous Unforeseen Expenses," from the 1st April, 1917, to the 18th March, 1918, in accordance with the Appropriation Act of 1917. Presented by Hon. Mr. Maclean, March 20, 1918.. .. ..*Not printed.*

69. Letter of the Honourable Albert Sévigny to the Right Honourable the Prime Minister, resigning his position as Minister of Inland Revenue, and the letter of the Prime Minister in acknowledgment thereof. Presented by Sir Robert Borden, March 26, 1918.
Not printed.

70. Return to an Order of the House of the 21st March, 1918, for a Return showing:—1. Who were the officers of the Engineers Training Depot stationed at St. Johns, Quebec, barracks during the months of October and December, 1917. 2. Who were the officers of the Engineers Training Depot stationed at St. Johns, Quebec, barracks on the 17th December, 1917. 3. Where these officers enlisted. 4. Where these officers resided before their enlistment. 5. Where these officers were residing at the time of their enlistment. Presented March 27, 1918.—*Mr. Archambault*.. .. ..*Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

71. Return of Orders in Council which have been published in the *Canada Gazette* and in the British Columbia *Gazette*, between 1st January 1917, and the 8th March, 1918, in accordance with provisions of subsection (*d*) of section 38 of the regulations for the survey, administration, disposal and management of Dominion lands within the 40-mile Railway Belt in the Province of British Columbia, as follows:—

P.C. 3277, 5th January, 1917. License of occupation of a portion of the bed of the Fraser river to the Kettle Valley Railway Company.

P.C. 159, 19th January, 1917. Limiting the right of homestead entry in the Railway Belt to persons who were British subjects or subjects of a country allied to Great Britain, or subject of a neutral country and who have continued to be so.

P.C. 107, 12th February, 1917. Waiving completion of naturalization, before issue of patent for Dominion Lands in certain cases where entrant is on active service.

P.C. 572, 5th March, 1917. Regulations *re* natural resources necessitated on account of war conditions.

P.C. 736, 17th March, 1917. Providing for homesteaders being given credit for time spent at agricultural labour in Canada during the year 1918, towards the performance of residence duties.

P.C. 982, 10th April, 1917. Authorizing the sale of certain lands in British Columbia to Canadian Pacific Railway Company for pipe-line purposes.

P.C. 2076, 1st August, 1917. Authorizing certain changes in the Timber Regulations.

P.C. 2562, 15th September 1917. Vesting the title to certain lands in the Railway Belt in His Majesty for the purposes of the Province of British Columbia.

P.C. 3210, 15th November, 1917. Authorizing the cutting of timber on Dominion lands for ship-building purposes.

P.C. 3243, 27th November, 1917. Confirming certain Orders in Council *re* administration of Dominion Lands in the Railway Belt in British Columbia.

P.C. 3245, 27th November, 1917. Permitting a man on active service giving power of attorney with respect to his rights to Dominion lands in Railway Belt, British Columbia.

P.C. 185, 21th January, 1918. Repealing Order in Council P.C. 159, January 19, 1917, and substituting certain regulations therefor.

P.C. 23–425, 20th February, 1918. Authorizing the issue of a lease to J. H. Morrison, Kamloops, of certain lands in the Railway Belt, British Columbia, for mining purposes. Presented by Hon. Mr. Meighen, April 2, 1918.. .. .. ..*Not printed.*

72. Return of Orders in Council which have been published in the *Canada Gazette*, between the 1st January, 1917, and the 8th March, 1918, in accordance with the provisions of "The Forest Reserves and Park Act," Section 19, of Chapter 10, 1-2 George V, as follows:—

P.C. 340, 7th February, 1917, amending Order in Council 19th December, 1916. *re* administration of "Project Meadows" in Forest Reserves in Railway Belt, British Columbia.

P.C. 2595, 18th September, 1917, placing the control of certain lands in the Waterton Lakes Park under the Director of Forestry.

P.C. 2594, 18th September, 1917, rescinding Order in Council 8th June *re* Rocky Mountains Park. Presented by Hon. Mr. Meighen, April 2, 1918.. .. ..*Not printed.*

73. Return of Orders in Council which have been published in the *Canada Gazette*, between 1st January, 1917, and the 8th March, 1918, in accordance with the provisions of Section 77 of the "Dominion Lands Act," Chapter 20, 7-8 Edward VII, as follows:—

P.C. 13, 8th January, 1917. Rescinding Order in Council 4th March, 1910, *re* S.W. ¼ of 4-9-14, W. 2nd Meridian, and making same available for homestead purposes.

P.C. 60, 13th January, 1917. Transferring certain lands in Cowesses Indian Reserve No. 73, to the Province of Saskatchewan, for road purposes.

P.C. 102, 15th January, 1917. Withdrawing from general disposition certain petroleum and natural gas rights in the vicinity of the City of Edmonton.

P.C. 108, 17th January, 1917. Authorizing free grant of lot 5, township 70-23, W. 5th, to "La Corporation Episcopale Catholique Romaine d'Athabaska."

P.C. 110, 17th January, 1917. Authorizing the sale of certain lands to Moses Lessard for irrigation purposes.

P.C. 159, 19th January, 1917. Providing that a person applying for a homestead entry in the Railway Belt, British Columbia, must be a British subject and has since continued to be a British subject, or a subject of a British Allied or neutral country.

P.C. 165, 20th January, 1917. Setting aside certain Dominion lands for Indian Reserve purposes.

P.C. 166, 20th January, 1917. Setting aside certain Dominion lands for Indian Reserve purposes.

P.C. 167, 20th January, 1917. Setting aside certain Dominion lands for Indian Reserve purposes.

P.C. 210, 26th January, 1917. Dispensing with residence duties in connection with the entry of Frank Ruppert for the S.W. ¼ of 16-33-14, W. 4th.

P.C. 301, 2nd February, 1917. Dispensing with residence duties in connection with the entry of Wm. Thorburn for the S.W. ¼ of 13-28-22, W. 2nd.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 316, 3rd February, 1917. Authorizing grant to L. F. Cardinal of the W. ½ of 22-108-13, W. 5th, by virtue of his occupation thereof at date of extinguishment of Indian Title.

P.C. 327, 6th February, 1917. Authorizing issue of free patent to Jos. Hewitt for the S.E. ¼ of 20-44-3, W. 2nd, in lieu of land occupied by him being included in a Forest Reserve.

P.C. 481, 20th February, 1917. Authorizing the issue of license of occupation to the Canadian Northern Western Railway of certain lands for a bridge site.

P.C. 493, 20th February, 1917. Dispensing with residence duties by Samuel McCall on the E. ½ of 21-31-1, W. 3rd.

P.C. 560, 28th February, 1917. Authorizing time spent at farm labour in Canada during 1917, to count as residence duties on entries for Dominion lands.

P.C. 555, 28th February, 1917. Making provisions of Orders in Council of 8th May, 1915 (P.C. 1042), 20th September, 1915 (P.C. 2150), 9th December, 1915 (P.C. 2888), and the 12th January, 1916 (P.C. 33), applicable to pre-emptions and purchased homesteads.

P.C. 561, 5th March, 1917. Authorizing change in regulations permitting granting of one day's priority of right to make entry for available Dominion lands.

P.C. 526, 5th March, 1917. Authorizing extension of terms of Order in Council 11th March, 1915, for period of four months up to 11th July, 1917.

P.C. 572, 5th March, 1917. Limiting disposal of any natural resources except to a British subject, subject of Allied country, or neutral country.

P.C. 610, 7th March, 1917. Rescinding Order in Council 30th January, 1914, in so far as it affects descriptions of lands granted to Indians, and certain lands described be granted instead thereof.

P.C. 686, 16th March, 1917. Granting right to Mr. Notman to purchase certain lands in Province of Manitoba.

P.C. 687, 16th March, 1917. Granting certain lands to Department of Militia and Defence.

P.C. 688, 16th March, 1917. Granting certain lands for church purposes to Synod of Diocese of Calagary.

P.C. 762, 20th March, 1917. Authorizing sale of certain lands to Council of the town of Maple Creek.

P.C. 848 29th March, 1917. Authorizing sale of lands to Western Canada Power Company for power development purposes.

P.C. 858, 29th March, 1917. Authorizing grant of land for cemetery purposes to Rural Municipality of Bright Sand, No. 529.

P.C. 918, 3rd April, 1917. Amending Order in Council of 14th December, 1916, with respect to application thereof to Canadian Expeditionary Forces.

P.C. 919, 3rd April, 1917. Granting certain lands for cemetery purposes to the village of Vanguard, Saskatchewan.

P.C. 926, 3rd April, 1917. Authorizing sale of N.W. ¼ 36-45-25, W. 3rd, to Allan V. Macie.

P.C. 927, 3rd April, 1917. Authorizing sale of certain lands to N. J. Bailey under certain conditions.

P.C. 1068, 18th April, 1917. Authorizing issue of lease of certain lands to Northern Fish Company, Limited, Selkirk, Manitoba.

P.C. 1066, 18th April, 1917. Authorizing issue of license of occupation of certain lands to the city of Winnipeg for water-power purposes.

P.C. 1067, 18th April, 1917. Dispensing with residence duties and authorizing issue of patent to James Wilson, in connection with the N.E. ¼ of 35-19-11, W.P.M.

P.C. 1069, 18th April, 1917. Authorizing grant of certain lands for cemetery purposes to the village of Major, Saskatchewan.

P.C. 1071, 18th April, 1917. Authorizing grant of certain lands to rural municipality of Lakeview, No. 454 Alberta, for cemetery purposes.

P.C. 1072, 18th April, 1917. Authorizing issue of patent of certain lands to Mr. D. Ennill.

P.C. 1189, 30th April, 1917. Granting certain lands for the erection of a creamery plant to the Canora Creamery Association, Limited.

P.C. 1222, 3rd May, 1917. Setting apart certain lands for the Indian of the Peguis.

P.C. 1207, 4th May, 1917. Authorizing issue of patent to Allen E. McDonald.

P.C. 1249, 8th May, 1917. *Re* granting patent to any person not a British subject by birth or naturalization who is on active service overseas.

P.C. 1268, 8th May, 1917. Rescinding Order in Council P.C. 572, 5th March, 1917, and enacting new regulations therefor.

P.C. 1315, 11th May, 1917. Granting certain lands for church and cemetery purposes to the Church of God of Edmonton, Alberta.

P.C. 1378, 21st May, 1917. Setting apart certain lands for park purposes and granting the same to the rural municipality of Mariposa, No. 350, Saskatchewan.

P.C. 1377, 21st May, 1917. Relieving Mr. H. Wills of further residence duties on the north half of 22-25-10 W. 4th.

P.C. 1348, 21st May, 1917. Authorizing grant of certain lands to Winnipeg Electric Railway Company.

P.C. 1429, 25th May, 1917. Authorizing certain regulations for the disposal of quartz mining claims on Dominion lands.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 1455, 29th May, 1917. Authorizing grant of certain lands to the town of The Pas for industrial purposes.

P.C. 1471, 1st June, 1917. Setting apart certain lands in the Province of Manitoba for Indians.

P.C. 1532, 4th June, 1917. Authorizing grant of certain lands for church purposes to the Board of Management of the Church and Manse Building Fund of the Presbyterian Church in Canada for Manitoba and the Northwest.

P.C. 1533, 4th June, 1917. Vesting certain lands in His Majesty in the right of the Province of Alberta.

P.C. 1536, 5th June, 1917. Authorizing Rev. W. B. Cumming, Saskatoon, to make entry by proxy on behalf of James Grossart.

P.C. 1580, 11th June, 1917. Withdrawing certain lands which had been reserved for the Hudson's Bay Railway.

P.C. 1613, 13th June, 1917. Authorizing grant of certain lands to the town of Gimli, for cemetery purposes.

P.C. 1691, 21st June, 1917. Authorizing sale of certain lands to John Hedberg, Jasper, Alberta.

P.C. 1675, 21st June, 1917. Authorizing license of occupation to Canadian Northern Railway Company of certain lands on the Red Deer River for bridge construction purposes.

P.C. 1761, 26th June, 1917. Authorizing sale of certain lands to the Canadian Pacific Railway Company.

P.C. 1716, 26th June, 1917. Restoring the homestead entry of L. H. Roberts who died while on active service overseas.

P.C. 1717, 26th June, 1917. Authorizing sale of certain lands to William Rincheshen.

P.C. 1718, 26th June, 1917 Authorizing grant of certain lands for cemetery purposes to the rural municipality of Bright Sand, No. 529, Saskatchewan.

P.C. 1817, 30th June, 1917. Authorizing exchange of certain lands to Indians in lieu of lands surrendered.

P.C. 1820, 30th June, 1917. Authorizing grant of lands for church and cemetery purposes to the Bethel Evangelical Scandinavian Lutherian Congregation.

P.C. 1821, 30th June, 1917. Authorizing grant of land for cemetery purposes to the Ruthenian Greek Catholic Parish of St. Michael's in Communion with Rome, St. Martin, Manitoba.

P.C. 1866, 6th July, 1917. Dispensing with residence duties in connection with the entry of W. L. Taylor for the N.W. ¼ 13-25-1, W.P.M.

P.C. 1877, 9th July, 1917. Authorizing person on active service overseas to appoint attorney to make application for patent.

P.C. 1937, 12th July, 1917. Authorizing grant of certain lands for cemetery purposes to St. George Cemetery Company, Egremont, Alberta.

P.C. 2039, 26th July, 1917. Authorizing grant of certain lands for park purposes to the town of Drumheller, Alberta.

P.C. 2036, 27th July, 1917. Authorizing grant of land for cemetery purposes to rural municipality of Bear Lake, No. 740.

P.C. 2037, 27th July, 1917. Authorizing grant of land for church purposes to Synod of the Diocese of Qu'Appelle.

P.C. 2038, 27th July, 1917. Authorizing sale of certain lands to Diocese of Ruperts Land.

P.C. 2066, 27th July, 1917. Authorizing the cancellation of the survey of certain lands along the old Dawson Road.

P.C. 2075, 30th July, 1917. Amending Order in Council dated 29th May, 1917, with reference to the name of the Board of Trade of the town of The Pas, Manitoba.

P.C. 2076, 1st August, 1917. Authorizing regulations *re* timber.

P.C. 2090, 1st August, 1917. Amending forest reserve regulations.

P.C. 2108, 6th August, 1917. Authorizing certain changes in Dominion lands regulations for the protection of water-power resources.

P.C. 2109, 6th August, 1917. Authorizing license of occupation to Canadian Northern Pacific Railway Company of certain lands in the bed of the South Thompson River.

P.C. 2171, 8th August, 1917. Authorizing the disposition of certain lands for townsite purposes.

P.C. 2239, 15th August, 1917. Confirming the late C. R. Coutts in his entry for the S.E. 6-83-17 W. 6.

P.C. 2241, 18th August, 1917. Authorizing sale by auction of certain school lands.

P.C. 2258, 18th August, 1917. Authorizing the lease of certain lands to the Salts and Potash Company of Canada.

P.C. 2259, 18th August, 1917. Granting certain lands for cemetery purposes to La Corporation Episcopale Catholique Romaine de Regina.

P.C. 2226, 18th August, 1917. Transferring certain lands from Indian Affairs to Interior Department to be used for church purposes.

P.C. 2287, 18th August, 1917. Confirming the late Joe White, who died on active service overseas, in his entry for the N.E. 11-89-9 W. 4.

P.C. 2419, 1st September, 1917. Dispensing with residence duties in connection with the entry of J. L. Crawford for the N.E. 21-2-15 W. 3rd.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 2436, 1st September, 1917. Transferring certain lands to the Province of Manitoba for drainage purposes.
P.C. 2420, 1st September, 1917. Granting certain lands to Col. Malloy.
P.C. 2460, 11th September, 1917. Granting certain lands for church purposes.
P.C. 2488, 11th September, 1917. Granting certain lands for summer home and shooting purposes.
P.C. 2489, 11th September, 1917. Granting certain lands for church purposes.
P.C. 2490, 11th September, 1917. Granting certain lands for cemetery purposes.
P.C. 2535, 11th September, 1917. Granting a lease of certain lands for cement purposes.
P.C. 2509, 11th September, 1917. Relieving entrant on active service from necessity of erecting a house on his homestead.
P.C. 2561, 15th September, 1917. Dispensing with residence duties in case of entry for the S.E. 33-10-15 W. 4.
P.C. 2593, 17th September, 1917. Granting certain lands to R. B. Clarke in lieu of other lands surrendered to the Crown by him.
P.C. 2641, 28th September, 1917. Granting certain lands to the Grand Trunk Pacific Development Company, Limited.
P.C. 2721, 3rd October, 1917. *Re* purchase of certain reclaimed lands in Kleskun Lake.
P.C. 2728, 3rd October, 1917. Granting certain lands for church purposes.
P.C. 2857, 12th October, 1917. *Re* certain lands granted for creamery plant purposes.
P.C. 2856, 12th October, 1917. Granting certain lands for cemetery purposes.
P.C. 3027, 3rd November, 1917. *Re* status of applicants for homestead entries as to nationality.
P.C. 3163, 9th November, 1917. Granting certain lands for church and cemetery purposes.
P.C. 3179, 13th November, 1917. Granting certain lands to A. Thoma, Calais, Alta.
P.C. 3201, 14th November, 1917. Setting apart certain lands for the Sioux Band of Indians.
P.C. 3242, 19th November, 1917. Granting certain lands for church purposes.
P.C. 3210, 15th November, 1917. Granting permission to cut certain timber for ship building purposes.
P.C. 3244, 29th November, 1917. Authorizing the granting of grazing permits in the Big Stick Forest Reserve.
P.C. 3499, 4th January, 1918. Transferring certain lands to the Indian Affairs Department.
P.C. 3512, 4th January, 1918. Granting certain lands for use for Customs purposes.
P.C. No. 41-72, 10th January, 1918. Granting certain lands for right of way purposes.
P.C. 65, 12th January, 1918. Granting certain lands to Alex. Cardinal, Jr., Fort Vermilion.
P.C. 67, 12th January 1918. Granting certain lands to Chas. Enn, Calais, Alberta.
P.C. 66, 12th January, 1918. Granting certain lands to Chas. Standing Ribbon, Calais, Alberta.
P.C. 157, 22nd January, 1918. Change in description of certain lands granted personal representatives of the late T. W. Chalmers.
P.C. 34-238, 30th January, 1918. Granting certain lands for cemetery purposes.
P.C. 317, 8th February, 1918. Granting certain lands to the province of Saskatchewan for roadway purposes.
P.C. 332, 11th February, 1918. Authorizing sale of certain lands reclaimed by drainage.
P.C. 67-352, 11th February, 1918. Granting certain lands to A. McKillop.
P.C. 69-352, 11th February, 1918. Exchanging certain lands with Hudson Bay Company in order to grant homestead entry for land relinquished by the company.
P.C. 357, 13th February, 1918. Granting certain lands to the City of Regina for park purposes.
P.C. 400, 18th February, 1918. Setting apart certain lands as school lands.
P.C. 401, 20th February, 1918. Enacting regulations affecting men on active service.
P.C. 23-425, 20th February, 1918. Leasing certain lands for mining purposes.
P.C. 430, 21st February, 1918. Granting certain lands to the Grand Trunk Pacific Branch lines for terminal purposes.
P.C. 459, 7th March, 1918. Enacting regulations *re* homesteaders employed as farm labourers.
P.C. 538, 7th March, 1918. Enacting certain regulations affecting men on active service who hold homestead entries.
P.C. 37-563, 8th March, 1918. Enacting regulations governing the leasing of unpatented lands held under homestead entry. Presented by Hon. Mr. Meighen, April 2, 1918.. . . . . *Not printed.*

74. Return called for by section 88, of chapter 62, Revised Statutes of Canada, requiring that the Minister of the Interior shall lay before Parliament, each year, a return of liquor brought from any place out of Canada into the Territories by special permission in writing of the Commissioner of the Northwest Territories, for the year ending 31st December, 1917. Presented by Hon. Mr. Meighen, April 2, 1918.. . . *Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

75. Return showing all lands sold by the Canadian Pacific Railway Company during the year ending 30th September, 1917, together with the names of the purchasers, in accordance with the Statutes of Canada, 1886, chapter 9, section 8. Presented by Hon. Mr. Meighen, April 2, 1918.. .. .. .

CONTENTS OF VOLUME 14—*Continued.*

performing. 4. What salary each one of them is receiving. 5. Who among them have performed service overseas, and how long they have been actually at the front. 6. How long they were in the trenches. 7. To which battalion they belonged when overseas. Presented April 11, 1918.—*Mr. Power*.. .. ..*Not printed.*

88. Return to an Order of the House of the 4th April, 1918, for a return showing:—1. What properties, if any, have been purchased by the Militia Department or the Military Hospital Commission in Quebec City, since the first of January, 1917. 2. From whom these purchases were made, and on whose recommendation. 3. The purchase price. Presented April 11, 1918.—*Mr. Power*.. .. ..*Not printed.*

89. Return to an Order of the House of the 4th April, 1918, for a return showing:—1. How many persons of all ranks are employed by the Military Hospitals Commission in British Columbia, and their names, rank and salaries. 2. Why they were appointed, and where they are stationed. 3. How many of these men have seen service at the front. 4. Who the senior official is of the Military Hospitals Commission in British Columbia. 5. What the total monthly cost of carrying on the work of the Commission in British Columbia is, and how many men are being looked after at present. 6. How many buildings are operated by the Military Hospitals Commission in British Columbia, and where they are situated. 7. How many officials from headquarters in Ottawa found it necessary to visit the Pacific Coast during the past year, and for what purpose. 8. If the Military Hospitals Commission has a regularly appointed publicity agent. If so, what his name is, and what his duties are. 9. If he has seen overseas service, and what his salary is. 10. The total cost of the publicity department during 1917. Presented April 11, 1918.—*Mr. Stevens*.. .. ..*Not printed.*

90. Return to an Order of the House of the 20th March, 1918, for a return showing the names of the staff of the Hospital Commission, the number of persons employed, their names, duties, salaries, former occupation and amounts paid to each for travelling expenses. Presented April 11, 1918.—*Mr. Devlin*.. .. ..*Not printed.*

91. Return to an Order of the House of the 3rd April, 1918, for a return showing:—1. How many Victoria Crosses have been awarded to members of the Canadian Expeditionary Force to date. 2. The name, address, battalion, and rank of each recipient. 3. The official respective record in respect of which each decoration was given in each case. Presented April 11, 1918.—*Mr. Middlebro*.. .. .. ..*Printed for sessional papers only.*

92. Return to an Order of the House of the 8th April, 1918, for a copy of a certain memorandum sent to the Minister of Public Works by the senior member for Ottawa relating to the abolition of patronage, and of all papers, letters and other documents which passed between him and the Minister of Public Works in relation thereto since the 17th of December, 1917. Presented April 2, 1918.—*Mr. McMaster*.. .. ..*Not printed.*

93. Summary Report of the Clerk of the Crown in Chancery of the General Election Returns, 1917. Presented by the Speaker, April 15, 1918.. .. ..*Not printed.*

94. Return to Order of the House of the 11th April, 1918, for a return showing:—1. What steps, if any, have been taken by the Government to investigate war trade conditions in the United States. 2. Apart from members of the Cabinet if any parties have been sent by the Canadian Government on missions respecting war trade conditions in the United States. If so, what the names are of those who have been sent. 3. If any such parties have been sent, what the total expense is to the Government of such missions. Presented April 15, 1918.—*Mr. Devlin*.. .. ..*Not printed.*

95. Return to an Address to His Excellency the Governor General, of the 20th March, 1918, for a copy of all Orders in Council, reports and correspondence with respect to the admission free of duty of farm tractors and other agricultural implements. Presented April 15, 1918.—*Sir W. Laurier*.. .. ..*Not printed.*

96. Copies of Orders in Council issued in connection with the Military Voters' Act, 1917, and the War-time Elections Act, as follows.—

P.C. 3010, 7th November, 1917.—Instructions for the guidance of electors under the Military Voters' Act, 1917.

P.C. 3158, 9th November, 1917.—Scrutineers; appointment of six and providing payment for services and expenses, etc.

P.C. 3159, 9th November, 1917.—Presiding officers; appointment of certain and providing payment for services as, etc.

P.C. 3276, 24th November, 1917.—Special returning officers and clerks; appointment of and providing payment for services as, etc. , , ,

P.C. 3277, 27th November, 1917.—Regulation providing polls for returned military electors who are Indians.

P.C. 3322, 29th November, 1917.—Provision for taking votes of military electors belonging to units or drafts under orders to leave Canada before polling day.

P.C. 3404, 17th December, 1917.—Presiding officers; Engineer Captain W. M. Frowd, appointed in place of Captain F. C. C. Pascoe, at Halifax, N.S.

P.C. 6405, 17th December, 1917.—*Re* taking votes of units under orders to leave Canada, O.C. 29th November, 1917, amended.

P.C. 7, 8th January, 1918.—Special returning officers and clerks; appointment of further number of.

CONTENTS OF VOLUME 14—*Continued.*

P.C. 8, 4th January, 1918.—Scrutineers, travelling and living expenses of defined.

P.C. 9, 4th January, 1918.—Special returning officers and clerks; remuneration of.

P.C. 10, 4th January, 1918.—Scrutineers; appointment Major Thomas Gibson, of London, Eng., in place of Brigadier-General J. F. L. Embury.

P.C. 11, 4th January, 1918.—Further regulations for carrying the Military Voters' Act, 1917, into effect.

P.C. 12, 8th January, 1918.—Payment for services of Boards of Appeal in Ontario and revising officers in Nova Scotia *re* revision of voters' lists.

P.C. 13, 4th January, 1918.—Election in Halifax; Ward 6 constituted one single polling division.

P.C. 63, 8th January, 1918.—Special returning officers and clerks; remuneration of. O.C. 4th January, 1918 (P.C. No. 9) amended.

P.C. 84, 12th January, 1918.—Special returning officers; appointment Capt. Harold Baker, C.E.F., London, Eng., in place of Lt.-Col. Nelson Spencer.

P.C. 85, 12th January, 1918.—Clerk of special returning officer; appointment Archibald Dickson, of Harrow, Eng, in place of Capt. Rippon, R.A.M.C.

P.C. 98, 15th January, 1918.—Clerk of special returning officers; appointment E. L. Ginna in place of Ainslie W. Greene.

P.C. 162, 19th January, 1918.—Resignation of R. A. Pringle as special returning officer and appointment of John W. P. Ritchie in his stead, and appointment of special returning officers and clerks.

P.C. 323, 8th February, 1918.—Length of sessions to constitute a day's work.

P.C. 396, 18th February, 1918.—Lieut. N. G. Charlton, presently in France, appointed to replace Major Powell as special returning officer.

P.C. 397, 18th February, 1918.—Edgar E. R. Chevrier appointed to replace J. A. Pinard as special returning officer.

P.C. 602, 12th March, 1918.—Proclamation of returns from overseas issued on receipt of telegraphic information. Presented by Hon. Mr. Doherty, April 15, 1918. *Not printed.*

97. Return to an Order of the House of the 3rd April, 1918, for a copy of all judgments rendered up to date under the operation of the Military Service Act, 1917, by the Central Appeal Judge. Presented April 15, 1918.—*Mr. Trahan* .. ..*Not printed.*

98. Return to an Order of the House of the 20th March, 1918, for a return showing the names of all persons employed in Ottawa in the Military Service Council, their salaries and former occupations. Presented April 15, 1918.—*Mr. Devlin*.. .. ..*Not printed.*

99. Report of the Royal Commission appointed to inquire into and report upon the Pilotage System and its administration at the port of Halifax, N.S. Presented by Hon. Mr. Ballantyne, April 15, 1918.. .. ..

CONTENTS OF VOLUME 14—*Continued.*

106. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs of a wharf at Ile Perrot Sud, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer*.. .. ..*Not printed.*

107. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs at Hudson's Wharf, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer*.. .. ..*Not printed.*

108. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs of wharf at Ile Perrot Nord, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer*.. .. ..*Not printed.*

109. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The sums of money expended on repairs at St. Zotique Wharf, since 1911. 2. The names of those who have been employed on said works, and the amount of money which has been paid to each of them. 3. The names of the parties who have supplied the materials, and the amount of money which has been paid to each of them. Presented April 18, 1918.—*Mr. Boyer*.. .. ..*Not printed.*

110. Return to an Order of the House of the 10th April, 1918, for a copy of all correspondence and other papers concerning the merger of the Bank of British North America with the Bank of Montreal. Presented April 18, 1918.—*Mr. Devlin*.. .. ..*Not printed.*

111. Return to an Order of the House of the 11th April, 1918, for a return showing:—1. Referring to *Canada Gazette* statement of March 30th giving particulars as to circulation and specie, against what approved securities were Dominion notes issued to the value of $92,820,000. 2. To what banks these notes were issued, and what the respective security was in each case. Presented April 18, 1918.—*Mr. Trahan.* *Not printed.*

112. Return to an Order of the Senate, dated April 16th, 1918, to the Clerk of the Senate for the following information:—1. The number of pages of the Senate Debates of last session, giving the number of unrevised and the number of revised. 2. Is the French translation made from the unrevised edition or from the revised? 3. Is the French translation of the Debates of last session completed? If so, when was the last copy delivered to the Printing Bureau? If not yet completed, how many pages remained untranslated on the 18th of March last? 4. How many translators are employed on the regular staff for this work? 5. What is the name and the salary of each? 6. Have they or any of them been employed at any other work for the Senate during or since last session? If so, what work? 7. Has any other person or persons been employed to assist the regular staff in the work of translating the Debates of last session? If so, state the name of each such person, the length of time he has been so employed, and the amount of his remuneration therefor. 8. Is each translator expected to translate a definite minimum number of pages of the Debates each working day? If so, how many printed pages are supposed to constitute a fair day's work for each man? 9. Did the regular staff of translators translate into English the speeches delivered in French during the last session? If so, how many pages? If not, who did this work, and what extra remuneration, if any, was paid for it?—*The Senate*.. .. ..*Not printed.*

113. Statement issued by the War Cabinet at the request of the Board of Admiralty, showing for the United Kingdom and for the World, for the period August, 1914, to December, 1917:—1. Mercantile losses by enemy action and marine risk. 2. Mercantile Shipbuilding Output. 3. Enemy vessels captured and brought into service; together with diagrams, showing mercantile losses and shipbuilding output for the United Kingdom and for the world, for the same period. Presented by Sir Robert Borden, April 18, 1918.

114. Return to an Order of the House of the 21st March, 1918, for a copy of all telegrams, letters, petitions and all other correspondence and documents, concerning the service of the steamer *Amelia* between Pictou and Magdalen Islands Presented April 19, 1918. —*Mr. Lemieux*.. .. ..*Not printed.*

115. Return to an Order of the Senate to the Clerk dated April 18, 1918, for a statement showing:—1. The names of all persons employed in connection with the work of preparing the Minutes of Proceedings, the Order Paper and the Journals of this House (*a*) in English and (*b*) in French, and the salary or other remuneration paid to each. 2. The number of each of these documents printed (*a*) in English and (*b*) in French, and the cost of printing and binding the same for the fiscal year ending the 31st of March, 1918.—*The Senate*.. .. ..*Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

116. Statement showing how many members of the outside service have been transferred to the inside service since October 1, 1917, and how many persons have been appointed under section 21 of the present Civil Service Act since that time. Presented by Hon. Mr. Maclean, April 22, 1918.. .. ..*Not printed.*

117. Return to an Address to His Excellency the Governor General of the 8th April, 1918, for a copy of Orders in Council in reference to the appointment of Colonel Langton as Paymaster General in the Militia Department. Presented April 22, 1918.—*Mr. Copp.*
Not printed.

118. Return to an Order of the House of the 18th April, 1918, for a return showing:—1. What blue books have been printed during the years 1916 and 1917. 2. Which of said books have been printed in both languages. 3. Which of said books have been printed in the English language only. 4. Which of said books have been printed in the French language only. Presented April 22, 1918.—*Mr. Demers*.. .. ..*Not printed.*

119. Copy of Order in Council P.C. 807, dated the 3rd of April, 1918, with respect to the reservation of Dominion Lands for disposition under the Soldiers' Settlement Act (Chapter 21, 7-8 George V). Presented by Hon. Mr. Meighen, April 23, 1918.
Not printed.

120. Statement of amounts paid to newspapers, etc., on account of Victory Loan Advertising. Presented by Sir Robert Borden, April 24, 1918.. .. ..*Not printed.*

121. Copy of the Report submitted by the Officer in charge of the Canadian War Records Office, London England, to the Right Honourable Sir Robert L. Borden, G.C.M.G., M.P., Prime Minister of Canada, on the work of the Canadian War Records Office since the date of its foundation to the 11th January, 1917. Presented by Sir Robert Borden, April 24, 1918.. .. ..*Not printed.*

121*a*. Copy of the Second Annual Report of the Canadian War Records Office for the year 1917. Report submitted by the officer in charge to the Hon. Sir Edward Kemp, K.C.M.G., M.P., Overseas Minister of Militia and Defence. Presented by Sir Robert Borden, May 17, 1918.. .. ..*Not printed.*

122. Return to an Order of the House of the 8th April, 1918, for a return showing:—1. How many persons belonging to class one were liable to be called under the Military Service Act, 1917, in each of the provinces and the Yukon Territory, respectively. 2. How many in each province have reported themselves for service. 3. How many in each province have asked to be exempted from military service. 4. How many in each province have been exempted by local tribunals. 5. How many decisions rendered in each province by local tribunals have been appealed from by: (*a*) recruits; (*b*) representatives or military authorities. 6. In how many appeal cases have decisions been rendered in each province, how many appeals have been allowed, and how many rejected in each province. 7. How many cases are still pending before the Central Appeal Judge. 8. Whether it is the intention of the military authorities or public representatives to appeal in some other cases, either before the appeal tribunal or before the Central Appeal Judge. 9. If so, how many in each province. Presented April 24, 1918.—*Mr. Trahan*... .. ..*Not printed.*

123. Return to an Order of the House of the 8th April, 1918, for a copy of all correspondence, certificates, recommendations and other documents in reference to the granting of a total disability pension to Colonel R. H. Labatt.—Presented April 24, 1918.—*Mr. Copp.*
Not printed.

124. Return to an Order of the House of the 24th April, 1918, for a return showing:—1. Upon whose recommendation the returning officer for the county of Joliette, in the last Federal election, was appointed. 2. Whether enumerators were appointed in accordance with paragraph one, section forty-two, of the Dominion Elections Act, as amended by the War-time Elections Act of 1917. 3. If so, the names of the enumerators so appointed, when the list of such enumerators was sent, and to what person or persons said list was sent. Presented April 25, 1918.—*Mr. Denis*.. .. ..*Not printed.*

125. Copy of Order in Council, P.C. 812, dated 5th April, 1918.—Regulations governing the Soldier Settlement Loan under the authority of the Soldier Settlement Act (Chapter 21, 7-8 George V). Presented by Hon. Mr. Meighen, April 26, 1918.. .. .. ..*Not printed.*

126. Return to an Address to His Excellency the Governor General of the 25th March, 1918, for a copy of all letters and telegrams exchanged between the Dominion Government and the various provincial executives concerning the Order in Council of 22nd December, 1917, respecting the sale of securities by provincial, colonial or foreign governments, municipalities and other bodies. Presented April 29, 1918.—*Mr. Lemieux*
Not printed.

CONTENTS OF VOLUME 14—*Continued.*

127. Return to an Order of the House of the 25th March, 1918, for a return showing:—1. If any money has been paid to the Dundalk *Herald*, the Flesherton *Advance*, the Markdale *Standard*, the Durham *Chronicle*, the Grey *Review*, or the Hanover *Post* for advertising or for any other reason since 1st October, 1917. If so, how many was paid in the case of each of the papers mentioned. Presented April 29, 1918.—*Mr. Cahill.* *Not printed.*

128. Return to an Order of the House of the 15th April, 1918, for a return showing:—1. The officers employed at Quebec on the staff of the Military District No. 5. 2. How long they have been connected with this branch. 3. What service each of them is performing. 4. What salary and allowance each of them is receiving. 5. Names of those amongst them who have performed service overseas. 6. How long they have been actually at the front. 7. How long they were in the trenches. 8. To which battalion they belonged while overseas. Presented April 29, 1918.—*Mr. Power*.. ..*Not printed.*

129. Report of the Commissioners appointed to investigate the businesses of William Davies Co., Ltd., and Matthews-Blackwell, Ltd., dated 1st November, 1917. Presented by Hon. Mr. Crothers, May 1, 1918.

130. Return to an Order of the House of the 24th April, 1918, for a return showing the details of certain totals being the estimated cost of street sewers, etc., given on figures 29 and 30 placed between pages 96-97 of Rural Planning and Development written by Thomas Adams, being a report published by the Commission of Conservation dated 1917. The said totals being $35,584, $26,736, $20,748 and $23,533. Presented May 1, 1918.—*Mr. Lemieux*.. .. ..*Not printed.*

131. Statement of expenditure of the Dominion Publicity Committee in account with the Dominion Government, and in connection with the Victory Loan, 1917. Presented by Hon. Mr. Maclean, May 1, 1918.

131*a*. Report of Mr. A. E. Ames, Chairman of the Dominion Executive Committee of Canada, in connection with the Victory Loan, 1917. Presented by Hon. Mr. Maclean, May 1, 1918.. .. ..*Not printed.*

131*b*. Statement showing details of remuneration paid in connection with Victory Loan. Presented by Hon. Maclean, May 11, 1918.. .. ..*Not printed.*

132. Return to an Order of the House of the 3rd April, 1918, for a return showing:—1. How many local tribunals were established throughout Canada under the Military Service Act. 2. What remuneration per diem was allowed each member of such tribunal. 3. What was remuneration per day for Secretary of tribunal and also for constables or caretaker of the tribunal sessional chamber. 4. What has been the total expenditure to date on account of tribunals under the Military Service Act. 5. Whether there are any outstanding claims unpaid. Presented May 1, 1918.—*Mr. White (Victoria).* *Not printed.*

133. Report of the Ninth Annual Meeting of the Commission of Conservation, Canada, November 27-28, 1917.—(*The Senate*).. .. ..*Not printed.*

134. Return showing—1. Whether the building of the hospital for invalid soldiers at Ste. Anne de Bellevue is under Government control. 2. If not, through whose agency. Whether it is being built by contract or under the supervision of any public body. 3. What sum has been paid by the Government for the land where this hospital is being erected. 4. What the cost of construction will be. 5. How many invalid soldiers it will accommodate. 6. How far this hospital is from Macdonald College. 7. Whether the Government has considered the very grave inconvenience which may result from the erecting of such an institution in the vicinity of a college where hundreds of young ladies are being educated. Presented May 1, 1918.—*Mr. Boyer* *Not printed.*

135. Return to an Order of the Senate, dated April 23, 1918, giving the following information:—The names, dates of appointments, salaries or wages of all clerks and employees of the Department of Public Printing and Stationery, under the following heads:—(*a*) King's Printer's staff, including advertising. (*b*) Printing Branch. 1. Clerks. 2. Proofreaders. 3. Typesetting rooms: Mono, Lino, Job and Parliamentary. 4. Press rooms: Platen and Cylinder. 5. Binding: Book, Pamphlet. 6. Stereotyping. 7. Map engraving. 8. Any other Departments. (*c*) Outside Printing Branch. (*d*) Accountants. (*e*) Stationery. (*f*) Distribution. (*g*) Mechanical staff. (*h*) *Canada Gazette*. (*i*) Caretaker. (*j*) Any other Departments.—(*The Senate*).. .. ..*Not printed.*

136. Return showing:—1. Whether tenders have been recently submitted to the Department of Militia and Defence or to the War Purchasing Commission for a supply of Smoked Wiltshire Bacon, at Toronto, Kingston and London. 2. If so, who the tenderers are, and what their prices are, in each case. 3. To whom the contract has been awarded in each case, and at what price. Presented May 2, 1918.—*Mr. Murphy*.. ..*Not printed.*

CONTENTS OF VOLUME 14—*Continued.*

137. Order in Council, P.C. 26/942, dated the 19th April, 1918, with regard to remissions made under section 88 of The Indian Act, chapter 81, R.S.C. 1906, of the interest on arrears of purchase price of Park Lot No. 19, in the village of Southampton, in the County of Bruce, Ontario, amounting to $18.—(*The Senate*).. .. ..*Not printed.*

138. Order in Council, P.P. 871, dated 23rd April, 1917, being regulations for the protection of migratory game birds, migratory insectivorous and migratory non-game birds, which inhabit Canada during the whole or any part of the year, under the authority of The Migratory Bird Act, 7-8 George V, 1917.—(*The Senate*).. .. .. ..*Not printed.*

139. Return to an Order of the House of the 6th May, 1918, for a return showing:—What the gross earnings of the National Transcontinental railway were for the year ending 31st March, 1918; how much was earned between Moncton and Quebec, between Quebec and Cochrane Junction, between Cochrane Junction and Winnipeg, and between Lake Superior Junction and Fort William, and the amount paid by that railway to the Canadian Pacific for terminal charges at Quebec. Presented May 13, 1918.—*Mr. Lavigueur*.. .. ..*Not printed.*

140. Return to an Order of the House of the 24th April, 1918, for a copy of all correspondence, letters, telegram and other papers exchanged between the Food Controller and the Winnipeg Civic Authorities concerning cold storage conditions at Winnipeg. Presented May 13, 1918.—*Mr. Lemieux*.. .. ..*Not printed.*

141. Interim Report No. 2, Georgian Bay Canal Commission,—Wheat Prices, and a Comparative Study of United States and Canadian Markets, by W. Sanford Evans. Presented by Hon. Mr. Carvell, May 13, 1918..*Printed for distribution and Sessional Papers.*

142. Interim Report No. 3, Georgian Bay Canal Commission—Transatlantic Passenger and Freight Traffic and Steamship Subsidies, by W. Sanford Evans. Presented by Hon. Mr. Carvel, May 13, 1918.. .. ..*Printed for distribution and Sessional Papers.*

143. Return to an Order of the House, of the 24th April, 1918, for a copy of all correspondence and petitions passed between the Prime Minister and Civil Service Federation, concerning certain appointments made in the Post Office and Customs Departments since the 17th of December, 1917. Presented May 13, 1918.—*Mr. Lemieux*..*Not printed.*

144. Return showing:—1. Whether the Government is aware that in the past sixteen months in the Cities of Winnipeg, Hamilton, Toronto, Ottawa and Montreal, the following quantities of foodstuffs, are reported to have been ordered to be destroyed as unfit for human consumption;—(*a*) Meats: Winnipeg, 7,262 lbs.; Hamilton, 4,874 lbs.; Toronto, quantities not given in lbs., only sides, quarters, legs, etc.; Ottawa, 7,787 lbs.; Montreal, 105,898 lbs. (*b*) Poultry: Winnipeg, 11,364 lbs.; Hamilton, 8 fowl; Montreal, 2,344 lbs. (*c*) Fish: Winnipeg, 9,066 lbs.; Toronto, 74,587 lbs,, weight not given, only number of packages for remainder; Montreal, 137,903 lbs. (*d*) Vegetables: Winnipeg, 265,565 lbs.; Toronto, 5,855 lbs. cabbage, the rest weight not given, only crates, baskets, etc., also recently 48,010 lbs., or 24 tons of food unfit for human consumption; Montreal, 13,940 lbs. (*e*) Eggs: Winnipeg, 3,013 lbs.; Hamilton, 40 doz.; Toronto, 1,050 doz., 6 tubs, 1 pail, and 8 gallons yolk. (*f*) Butter: Winnipeg, 3,374 lbs.; Hamilton, 22 lbs. (*g*) Fruit (fresh and dried): Winnipeg, fresh, 46,375 lbs., dried, 37,207 lbs.; Hamilton, fresh, 12 baskets; Montreal, fresh, 3,362 lbs. 2. If so, what action the Government proposes taking to prevent a continuance of such waste. Presented May 13, 1918.—*Mr. Foster* (*York*).

145. Return showing:—1. Whether the Government is aware that 236,490 pounds of food were destroyed in the city of Toronto between April 4 and April 29, 1918, according to a report of one of the Departments of the Toronto City Corporation. 2. Whether the Food Controller has taken any action to stop such wholesale waste of food. 3. If so, what he has done in this particular case. Presented May 15, 1918.—*Mr. Proulx.*
Not printed.

146. Return to an Order of the House of the 22nd April, 1918, for a return showing:—1. The names of all persons employed in connections with the work of preparing the Votes and Proceedings, the Order Paper and the Journals of the House (*a*) in English, and (*b*) in French, and the salary and other remuneration paid to each. 2. The number of each of these documents printed, (*a*) in English, and (*b*) in French, and the cost of printing and binding the same for the fiscal year ending the 31st of March, 1918. Presented May 15, 1918.—*Mr. Currie*.. .. ..*Not printed.*

147. Return to an Order of the House of the 22nd April, 1918, for a return showing:—1. The names of all persons employed in connection with the work of reporting and translating in the House. 2. How long each has been so employed. 3. The rate of remuneration paid to each during the past year, with the total amount paid to each class of persons. 4. Number of copies of the Debates of the House printed during the past year, (*a*) in English, and (*b*) in French, specifying the number of the unrevised and of the revised editions, respectively. 5. The cost of printing and binding the same for each year since 1900, inclusive. 6. The amounts paid in addition to the above, in each year since 1900, inclusive, for (*a*) reporting, (*b*) translating, (*c*) typewriting, and (*d*) printing proceedings before Parliamentary Committees. Presented May 15, 1918. *Mr. Currie.*
Not printed.

CONTENTS OF VOLUME 14—*Continued.*

148. Return to an Order of the House of the 24th April, 1918, for a return showing:—1. What control the Canadian Government has over the operations of the Imperial Royal Flying Corps in Canada, and what Department of the Government would exercise this control. 2. Whether the Canadian Government has any officers or representatives on the Canadian Branch of the Imperial Flying Corps. If so, what their names are, and what positions they occupy. 3. Whether the Canadian Government intends to take over all the offices, plant, and equipment, of the Imperial Royal Flying Corps in Canada at an early date. If not, why not. How many accidents and deaths have occurred in Canada, United States and Overseas among our flying men. 5. The nature of the investigations into these accidents, and where the records are kept. 6. Whether the Government of Canada at the close of the war intends to establish and maintain a Canadian Flying Corps. If so, what preparations are under way, with this end in view. 7. How many Canadians and how many Americans, have joined the Imperial Royal Flying Corps in Canada. 8. How many mechanics are employed by the Imperial Royal Flying Corps in Canada. 9. What amount of money has been expended in Canada by the Imperial Royal Flying Corps. 10. How many Canadian Officers who have seen air service overseas are in the employ of the Imperial Royal Flying Corps in Canada. Presented May 16, 1918.—*Mr. Armstrong (Lambton).*

148*a*. Return to an Order of the House of the 24th April, 1918, for a return showing:—1. What status the Canadian recruits of the Royal Flying Corps have in the military affairs of Canada. 2. In the case of permanent injury or death of Canadians in the Royal Flying Corps in the discharge of their duties, what provision has been made to pension their dependents. 3. How many men came to Canada from England to establish training camps for the Royal Flying Corps; if any of these men have returned to England. If so, how many have been replaced by Canadians. 4. What comparative results were obtained in training cadets at the training camps around Toronto and the camps located in Texas. 5. Whether the Royal Flying Corps went to Texas and remained there at the expense of, and on the request of the United States Government. 6. Whether the authorities of the Royal Flying Corps were asked to give consideration to a location in British Columbia. If so, what the nature of the request was. 7. If it is not a fact that the weather conditions in Texas proved very unfavourable for flying corps training purposes. 8. What investigations of a technical character were made of the air conditions in Texas before selecting that place as a training ground for our airmen. 9. What investigations were made as to the atmospherical and climatical conditions in British Columbia regarding the locating of an air squadron training camp in that province. 10. Whether the Imperial Munitions Board took an option to lease a large area of land at Delta, near Vancouver, B.C., to establish winter training camps for the Canadian training squadrons of the Royal Flying Corps, and whether tenders were asked for materials, hangers, buildings, etc. If so, why these negotiations were dropped. 11. How many deaths in the Royal Flying Corps training camps in Texas resulted from atmospherical conditions, which are unfavourable to the successful training of aviators. 12. Whether any requests have been made to the Canadian Government for assistance to the Royal Flying Corps either through appropriation or gifts of money for training machines. If so, the nature of these requests. 13. Where the records are kept of the causes of injury or illness of Canadian cadets and mechanics of the Royal Flying Corps. 14. Whether English-born drill sergeants are exclusively employed in the training of Canadian cadets in the Royal Flying Corps in Canada. 15. What efforts have been made by the Canadian Government or individuals or organizations to develop and assist the Flying Corps in Canada, and whether the Government has extended any assistance to these individuals or organizations. 16. Whether any part of the grant of $100 provided by Order in Council for each aviator trained in Canada to defray a part of the expense incurred in training has been paid, or whether any request for payment has been made. Presented May 16, 1918.—*Mr. Armstrong (Lambton).. .. .. ..Not printed.*

149. Second Report of the War Purchasing Commission, covering period from 1st January, 1917, to 31st March, 1918. Presntd by Sir Robert Borden, May 16, 1918.. .. .. ..*Not printed.*

150. Return to an Order of the Senate dated 9th May, 1918, for a return giving a statement of imports of petroleum oils and spirits (gallons, value and duty) during each of the following fiscal years ending 31st March: 1909-10-11-12-13-14-15-16-17, and for each month of the unexpired year ending 31st March, 1918.—(*The Senate*).. ..*Not printed.*

151. Report of the Administrative Chairman of the Honourary Advisory Council for Scientific and Industrial Research 1917-18. Presented by Sir George Foster, May 17, 1918. *Not printed.*

152. Return to an Address to His Excellency the Governor General, of the 13th May, 1918, for a copy of the Order in Council appointing Mr. Main Johnson and passed under the War Measures Act as mentioned by Hon. Mr. Rowell on page 1350 of *Unrevised Hansard.* Presented May 20, 1918.—*Mr. Archambault.. .. ..Not printed.*

153. First Report of the Munition Resources Commission, November, 1915, to February, 1918, inclusive. Presented by Hon. Mr. Burrell, 20th May, 1918.. .. ..*Not printed.*

CONTENTS OF VOLUME 14—*Concluded.*

154. Return to an Order of the House of the 22nd April, 1918, for a return showing:—What amounts have been paid by the Government for printing or advertising to the *Globe*, Toronto, and the *Devoir*, Montreal, during each of the fiscal years ending 31st March, 1915, 1916, 1917 and 1918. Presented May 20, 1918.—*Mr. MeMaster*... ..*Not printed.*

155. Return to an Order of the House of the 25th March, 1918, for a copy of all petitions, letters or communications of any kind either asking for or opposing the importation of coolie labour, from first of September last to date. Presented May 20, 1918.—*Sir Wilfrid Laurier*.. .. ..*Not printed.*

156. Return to an Order of the House of the 25th March, 1918, for a copy of all memoranda and petitions by Slav subjects of Austria, naturalized in Canada, setting forth grievances and suggesting remedies. Presented May 20, 1918.—*Sir Wilfrid Laurier.*
Not printed.

157. Return to an Order of the Senate, dated 12th April, 1918, for a return giving:—1. The name, rank, and qualifications of each of the persons, upon whose advice and recommendation, lobster hatcheries, heretofore operated in Canada by the Department of Naval Affairs, are to remain closed. 2. Copies of the reports and recommendations (or if the same are published, the references thereto in official publications), which fully disclose all the facts, reasons, and grounds, upon which the Department makes its decision to abandon the policy of operating lobster hatcheries.—(*The Senate*).
Not printed.

158. Order in Council P.C. 668, dated 25th March, 1918, *re* procedure for conferring titles of honour upon subjects of His Majesty ordinarily resident in Canada. Presented by Sir Robert Borden, May 21, 1918.. .. ..*Not printed.*

159. Return to an Order of the House of the 2nd May, 1918, for a return showing:—1. The amount paid the Toronto *Globe* and the Toronto *Star* respectively, from 1st January, 1917, to 1st April, 1918, for all service between the said dates. 2. Whether any contract of any kind was made with either of the said newspapers between the dates mentioned for advertising, publicity, or news editorial and feature service. 3. If so, by whom said contract or contracts were made, and what the particulars are thereof. Presented May 22, 1918.—*Mr. Murphy*.. .. ..*Not printed.*

160. Return to an Order of the House of the 8th April, 1918, for a return showing:—1. What quantity of bran, shorts, or mill feed have been exported to the United States (*a*) by license; (*b*) without license, between 1st August, 1917, and 28th February, 1918. 2. To what firms in Canada licenses to export this feed have been granted, and for what quantity in each case. Presented May 22, 1918.—*Mr. Kay*.. .. ..*Not printed.*

161. Return to an Order of the House of the 15th May, 1918, for a return showing:—1. The total amount paid to the Journal Publishing Company of Ottawa, Limited, during the fiscal years 1912-13-14-15-16-17 inclusive, for (*a*) rentals; (*b*) printing. 2. Whether the official cheques of the Government for said rentals and printing jobs were issued directly in favour of the above company, or to P. D. Ross, Esq. Presented May 23, 1918.—*Mr. Brouillard*.. .. ..*Not printed.*

162. Return to an Order of the House of the 16th May, 1918, for a return showing:—1. The total number of the families of soldiers deceased since the beginning of the war, who receive pensions from the Government. 2. Of this number, how many reside in Great Britain, how many reside in Canada, and how many reside elsewhere. Presented May 23, 1918.—*Mr. Seguin*.. .. ..*Not printed.*

163. Report dealing with the purchase and sale of Fordson tractors by the Canada Food Board. Presented by Hon. Mr. Crerar, May 23, 1918.. .. ..*Not printed.*

SHIPPING REPORT

OF THE

DEPARTMENT OF CUSTOMS

CONTAINING THE

STATEMENTS OF NAVIGATION AND SHIPPING

OF THE

DOMINION OF CANADA

FOR

THE FISCAL YEAR ENDED MARCH 31

1917

COMPILED FROM OFFICIAL RETURNS IN THE
DEPARTMENT OF CUSTOMS

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

[No. 11*a*—1918]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., etc., Governor General and Commander-in-Chief of the Dominion of Canada.

May it Please Your Excellency:—

The undersigned has the honour to present to Your Excellency the Annual Report of the Department of Customs, containing Statements of Navigation and Shipping of the Dominion of Canada for the Fiscal Year ended March 31, 1917, as compiled from official returns and laid before me by the Commissioner of Customs.

All of which is respectfully submitted.

A. L. SIFTON,
Minister of Customs.

Ottawa, February 28, 1918.

CUSTOMS DEPARTMENT,
OTTAWA, January 22, 1918.

Hon. A. L. SIFTON,
Minister of Customs.

I have the honour to hand you the Annual Report of the Department of Customs, containing Statements of Navigation and Shipping of the Dominion of Canada for the fiscal year ended March 31, 1917.

I have the honour to be, sir,

Your obedient servant,

JOHN McDOUGALD,
Commissioner of Customs.

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EXPLANATORY NOTE

TONNAGE SHOWN IN STATEMENTS ARE NET TONS.

No. 1.—Comparative Statement showing the Tonnage of all Vessels entered Inwards and Outwards in the Dominion of Canada, during each Fiscal Year, from 1868 to 1917, inclusive.

NAVIGATION.

Fiscal Year.	Tonnage of Vessels built.	Tonnage of Vessels registered.	Tonnage of Vessels entered Inwards and Outwards (Sea-going and Inland Navigation exclusive of Coasting).	Tonnage of Vessels employed in the Coasting Trade entered Inwards and Outwards.	Tonnage and value of vessels sold to other countries.	
					Tonnage.	Value.
	Tons.	Tons.	Tons.	Tons.	Tons.	$
1868	87,230	113,692	12,982,825	.....	.....	.....
1869	96,439	125,408	10,461,044	.....	.....	.....
1870	93,166	110,852	11,415,870	.....	.....	.....
1871	106,101	121,724	13,126,028	.....	.....	.....
1872	114,065	127,371	12,808,160	.....	.....	.....
1873	140,370	152,226	11,748,997	.....	.....	.....
1874	174,404	163,016	11,399,857	.....	.....	.....
1875	188,098	204,002	9,537,155	.....	.....	.....
1876	165,041	144,422	9,911,199	10,300,939	64,134	2,189,270
1877	127,297	126,160	11,091,244	8,968,862	46,329	1,576,244
1878	106,976	100,089	12,054,890	11,047,661	35,039	1,218,145
1879	103,551	94,882	11,646,812	12,066,683	19,318	529,824
1880	68,756	64,982	13,577,845	14,053,013	16,208	464,327
1881	79,364	70,210	13,802,432	15,116,766	16,808	348,018
1882	68,240	78,076	13,379,882	14,791,064	16,161	402,311
1883	73,576	78,229	13,770,735	15,683,566	23,896	506,538
1884	70,287	80,822	14,359,026	15,473,707	17,368	416,756
1885	57,486	65,962	14,084,712	15,944,422	13,177	246,277
1886	37,531	40,872	13,969,232	16,368,274	14,343	266,363
1887	26,798	67,662	14,090,998	17,513,677	9,263	143,772
1888	22,698	33,298	15,217,308	18,789,279	14,479	289,969
1889	23,835	31,998	16,054,221	19,834,577	16,173	266,817
1890	39,434	53,853	18,446,100	22,797,115	22,844	442,781
1891	55,477	52,506	18,803,648	24,694,580	15,143	280,474
1892	44,321	61,457	18,692,455	24,783,844	36,399	506,747
1893	38,521	45,796	18,539,534	24,579,123	31,317	363,916

No. 1.—Comparative Statement showing the Tonnage of all Vessels entered Inwards and Outwards, etc.—*Concluded.*

NAVIGATION.

Fiscal Year.	Tonnage of Vessels built.	Tonnage of Vessels registered.	Tonnage of Vessels entered Inwards and Outwards (Sea-going and Inland Navigation exclusive of Coasting).	Tonnage of Vessels employed in the Coasting Trade entered Inwards and Outwards.	Tonnage and value of vessels sold to other Countries.	
					Tonnage.	Value.
	Tons.	Tons.	Tons.	Tons.	Tons.	$
1894	23,497	29,878	20,353,081	26,560,968	21,960	243,429
1895	18,728	26,125	19,100,963	25,473,434	16,567	172,563
1896	10,753	14,144	21,870,473	27,431,753	12,203	99,392
1897	12,058	22,959	23,373,933	27,267,979	9,158	105,164
1898	22,426	27,716	24,746,116	29,663,950	17,210	191,069
1899	22,085	28,257	25,420,110	30,212,496	7,562	126,466
1900	28,544	40,443	26,914,095	33,631,730	13,354	205,618
1901	20,156	35,156	26,029,808	34,444,796	4,490	66,468
1902	28,288	34,236	30,025,404	40,700,907	11,360	235,865
1903	30,856	41,405	33,655,043	44,990,358	11,172	220,602
1904	28,397	33,192	31,202,205	45,505,122	7,208	87,115
1905	21,865	27,583	32,277,820	44,377,261	3,696	100,363
1906	18,724	37,639	34,732,172	46,324,062	9,487	187,725
*1907	33,205	31,635	30,595,891	31,691,420	3,855	68,190
1908	49,928	78,144	39,575,031	50,529,835	4,515	132,900
1909	29,023	32,899	40,701,603	52,670,198	3,644	98,643
1910	24,059	33,383	44,567,991	56,750,928	5,047	133,800
1911	22,812	50,006	47,429,545	66,627,934	5,885	201,526
1912	31,065	30,021	52,973,127	66,267,662	4,265	140,350
1913	24,325	30,225	57,849,783	73,644,713	7,976	610,650
1914	46,887	46,909	61,919,483	78,356,809	8,258	169,618
1915	45,721	55,384	53,604,153	73,099,982	17,044	1,150,950
1916	13,497	102,239	57,721,098	68,709,424	4,529	192,575
1917	28,638	105,826	65,712,544	64,895,622	24,954	4,398,570

* 9 months.

No. 2.—Statement showing the Description, Number and Tonnage of Vessels built and registered, also the Number, Tonnage and Value of Vessels sold to other Countries at each Port and Outport in the Dominion of Canada, during the Fiscal Year ended March 31, 1917.

Ports and Outports.	Built.						Registered.						Ships Sold to Other Countries.		
	Steam.		Sail.		Total.		Steam.		Sail.		Total.				
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	Value.
															$
Annapolis Royal, N.S.	1	32	1	384	2	416	1	32	1	384	2	416			
Arichat, N.S.							3	44	1	16	4	60	1	99	4,500
Barrington Passage, N.S.							5	55			5	55			
Canso, N.S.			1	12	1	12	1	12			1	12	1	44	10,000
Charlottetown, P.E.I.									5	214	5	214			
Chatham, N.B.	4	72	11	186	15	258	6	94	13	214	19	308			
Collingwood, Ont.	3	6,171			3	6,171									
Goderich, Ont.	2	50			2	50	2	50			2	50			
Halifax, N.S.	1	23	2	75	3	98	6	777	2	526	8	1,303	1	20	2,000
Kenora, Ont.							1	10			1	10			
Kingston, Ont.							1	5			1	5			
Liverpool, N.S.			2	515	2	515	1	12	2	363	3	375			
Lockport, N.S.													3	350	19,000
Lunenburg, N.S.	7	77	19	2,279	26	2,356	14	174	23	3,158	37	3,332	18	2,521	212,600
Montreal, Que.	4	3,600	7	1,468	11	5,068	26	43,075	20	12,057	46	55,132	9	13,435	3,244,304
New Westminster, B.C.	8	62	2	1,345	10	1,407	13	96	7	2,174	20	2,270			
Ottawa, Ont.	2	43			2	43	4	132	2	298	6	430			
Parrsboro, N.S.			6	2,633	6	2,633			6	2,633	6	2,633			
Paspebiac, Que.	1	33	12	125	13	158	1	33	12	125	13	158	1	99	3,000
Peterboro, Ont.	1	7	2	78	3	85	1	5			1	5			
Pictou, N.S.							1	1,806			1	1,806	1	1,806	240,000
Port Arthur, Ont.	2	28			2	28	2	1,405	2	1,932	4	3,337			
Port Dover, Ont.	1	81			1	81	1	55			1	55			
Port Hawkesbury, N.S.							1	24			1	24			
Prince Albert, Sask.							4	385	1	145	5	530			
Prince Rupert, B.C.	3	35			3	35	6	64	1	273	7	337			
Quebec, Que.	3	280	7	1,018	10	1,298	4	2,813	13	4,155	17	6,968			
St. Andrews, N.B.							3	37	2	114	5	151			
St. Catharines, Ont.							3	81			3	81			

No. 2.—Statement showing the Description, Number and Tonnage of Vessels built and registered—*Concluded.*

Ports and Outports.	Built.						Registered.						Ships Sold to Other Countries.		
	Steam.		Sail.		Total.		Steam.		Sail.		Total.				
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	Value.
															$
St. John, N.B.	2	19			2	19	4	109	2	394	6	503	1	2,159	369,866
Sault Ste. Marie, Ont.	1	5	2	174	3	179	1	5	2	174	3	179	1	167	600
Shelburne, N.S.			8	1,197	8	1,197									
Sorel, Que.			6	2,342	6	2,342	3	213	6	2,342	9	2,555	1	278	35,000
Sydney, N.S.			2	20	2	20	1	831	2	170	3	1,001			
Toronto, Ont.	1	38			1	38	9	11,150			9	11,150	2	1,168	86,000
Vancouver, B.C.	32	2,176			32	2,176	45	4,512	8	2,941	53	7,453	4	2,682	162,00
Victoria, B.C.	6	195	2	347	8	542	3	40			3	40	1	14	2,700
Weymouth, N.S.	2	33	2	503	4	536	2	33	4	683	6	716			
Windsor, N.S.			2	332	2	332									
Winnipeg, Man.							11	875	4	698	15	1,573			
Yarmouth, N.S.			1	545	1	545			3	599	3	599	2	172	7,000
Total	87	13,060	97	15,578	184	28,638	190	69,044	144	36,782	334	105,826	47	24,954	4,398,570

No. 3.—STATEMENT showing the Trade via St. Lawrence River (Sea-going Vessels) Inwards and Outwards, during the Fiscal year ended March 31, 1917.

	Vessels.		Freight	
	No.	Tons Register.	Tons Weight.	Tons Measurement.
Inwards	882	2,117,136	246,787	93,628
Outwards	943	2,639,065	2,686,669	663,126
Total trade	1,825	4,756,201	2,933,456	756,754

No. 4.—Statement of Vessels, British, Canadian and Foreign, entered Inwards

Number.	Ports and Outports.	WITH CARGOES.									
		British.					Canadian.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
1	Albert, N.B										
2	Alberton, P.E.I						2	32	41		10
3	Alert Bay, B.C										
4	Amherst, N.S	2	418	800		12					
5	Annapolis Royal, N.S						4	751	1,479	1,520	22
6	Anyox, B.C						30	17,539	31,296		479
7	Arichat, N.S						74	2,001	1,642		459
8	Baddeck, N.S						14	355	7		65
9	Barrington Passage, N.S						2	196	340		10
10	Barton, N.S						6	666	53		35
11	Bathurst, N.B	1	2,280			36	16	334	75		66
12	Bear River, N.S						10	1,102	618		59
13	Belliveau's Cove, N.S						1	123		6	5
14	Bridgetown, N.S						3	352	711	740	15
15	Bridgewater, N.S	3	681	1,130		17	4	474	855		21
16	Buctouche, N.B										
17	Campbellton, N.B										
18	Campo Bello, N.B						25	4,144	233		234
19	Canning, N.S						2	431			12
20	Canso, N.S	3	195	250		16	14	1,813	2,740		74
21	Caraquet, N.B						158	2,337	2,355		664
22	Charlottetown, P.E.I	3	677	1,009		22	45	29,724	6,667		1,496
23	Chatham, N.B						1	99	198		6
24	Chemainus, B.C										
25	Chester, N.S						32	551	554		108
26	Chicoutimi, Que	1	2,780	356		68					
27	Church Point, N.S						1	99		203	5
28	Clarks Harbour, N.S						3	205	448		13
29	Clementsport, N.S						4	596	74	92	24
30	Dalhousie, N.B										
31	Digby, N.S						8	694	1,095		35
32	Dorchester, N.B						2	268	469		9
33	Fredericton, N.B						3	952	1,785		18
34	Freeport, N.S						2	186	328		9
35	Gaspe, Que						6	755	900		24
36	Georgetown, P.E.I						1	197	316		5
37	Glace Bay, N.S						140	7,354	6,566		450
38	Halifax, N.S	321	981,801	126,217		29,907	183	90,719	51,548		3,496
39	Hantsport, N.S						2	224	462		8
40	Hillsboro, N.B						1	825	40		4
41	Indian Island, N.B										
42	Isaac's Harbour, N.S						2	180	50		10
43	Joggins Mines, N.S										
44	Kentville, N.S						2	257			10
45	Kingsport, N.S						1	96			4
46	Ladner, B.C										
47	Ladysmith, B.C										
48	La Have, N.S	5	1,400	2,668		31	87	7,975	10,247		1,186
49	Levis, Que	1	3,046	20		38					
50	Liverpool, N.S	1	59	100		4	9	1,258	2,179		51
51	Lockeport, N.S						47	2,073	3,039		454
52	Lord's Cove, N.B						128	944	505		252
53	Louisburg, N.S	65	91,473	179,525		2,011	18	4,698	4,261		247
54	Lower East Pubnico, N.S						29	1,555	365		381
55	Lunenburg, N.S	9	2,026	3,225		56	268	23,260	29,804		3,746
56	Magdalen Islands, Que	6	453	51		31					
57	Mahone Bay, N.S						19	1,750	2,025		264
58	Maitland, N.S						1	99	1		5
59	Meteghan River, N.S						1	145	16		6

rom Sea, at each Port and Outport, during the Fiscal Year ended March 31, 1917.

FORIGN.					IN BALLAST.									
					BRITISH.			CANADIAN.			FOREIGN.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
								4	531	14				1
														2
								3	355	41	36	5,606	376	3
1	84	114		8							2	494	16	4
								1	95	5	2	18	5	5
78	83,817	107,326		617				23	5,052	260	36	4,639	402	6
10	664	386		102				3	856	32	5	559	72	7
6	482	3		85				27	1,749	385	6	2,863	47	8
								6	60	31	69	1,483	373	9
								13	1,370	72	1	92	3	10
1	285			8	3	7,907	99				16	10,164	209	11
								2	226	8	1	261	8	12
								2	298	11				13
														14
1	256	393		5	3	950	15				53	21,041	406	15
1	281	300		8							3	285	14	16
1	382	300		10	5	11,232	130				14	15,627	267	17
24	252	106		52				92	15,039	893	524	12,235	1,899	18
														19
12	1,195	729	105	77	58	9,757	824	53	4,783	966	228	10,957	2,934	20
														21
13	5,109	9,656		108	3	201	16	3	237	15				22
5	1,216	1,973		36	7	18,383	210				88	31,075	750	23
								6	263	32	51	3,618	124	24
											2	20	6	25
					7	15,714	234				7	10,678	159	26
								5	881	30				27
								3	69	20	66	969	198	28
								6	741	32				29
											37	26,215	449	30
								5	3,026	19	15	1,183	116	31
														32
12	2,574	5,063		59										33
														34
10	2,814	4,159		93							8	10,590	171	35
					5	239	21							36
4	62			30				9	341	26				37
113	61,992	79,162		1,613	225	757,198	12,227	139	19,890	1,932	302	469,916	7,438	38
								1	825	5	16	4,736	257	39
								4	3,787	16	8	3,352	43	40
								5	8	7	100	1,118	208	41
1	74	100		6				1	10	4	14	580	152	42
					1	164	4	1	91	4	5	1,064	24	43
														44
								3	2,231	70	1	145	4	45
								3	136	17				46
					1	280	25	100	15,296	629	159	59,205	1,354	47
4	521	647		51	1	122	6	7	794	85	14	924	231	48
														49
162	10,191	9,430		2,347	2	644	13	1	95	5	21	5,933	143	50
30	2,096	1,417		525							11	146	30	51
6	74	29		12				206	3,936	578	116	1,679	262	52
221	123,407	263,377		3,207	76	110,940	2,110	113	99,710	2,161	53	43,926	1,116	53
12	774	316		216				1	67	6	27	1,385	374	54
3	465	637		31				42	2,602	525	29	2,235	489	55
3	170	31		18	21	1,608	386				6	755	137	56
														57
								1	99	5				58
					1	199	6	3	315	17				59

No. 4.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

Number.	Ports and Outports.	WITH CARGOES.									
		BRITISH.					CANADIAN.				
		Number of Vessels.	Tons Register.	Quantity of Freight		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
60	Moncton, N.B.	1	199	410		6	1	281	550		6
61	Montague Bridge, P.E.I.						1	99	297		6
62	Montreal, Que.	191	847,341	208,237	82,805	21,492	3	3,794	3,130	100	59
63	Moose Factory, Man.						1	1,541	146	402	50
64	Murray Harbour, P.E.I.						3	74	27		16
65	Nanaimo, B.C.	1	280	1		21	6	2,053	733		64
66	New Campbellton, N.S.										
67	New Castle, N.B.										
68	Newport, B.C.										
69	New Westminster, B.C.						5	572	266		36
70	North East Harbour, N.S.						3	82	15		18
71	North Head, N.B.						81	12,599	1,330		719
72	North Sydney, N.S.	217	104,983	1,085		6,558					
73	Ocean Falls, B.C.	2	3,252	2		156	2	463	574		10
74	Parrsboro, N.S.						2	221	450		10
75	Paspebiac, Que.										
76	Perce, Que.						1	80	130		5
77	Pictou, N.S.						3	280	448		14
78	Port Alberni, B.C.	1	280	50		23					
79	Port Clyde, N.S.										
80	Port Elgin, N.B.										
81	Port Hawkesbury, N.S.	5	868	1,120		37	43	20,942	3,170	91	1,265
82	Port Hood, N.S.										
83	Port La Tour, N.S.										
84	Port Mulgrave, N.S.						2	181	203		9
85	Port Simpson, B.C.										
86	Port Wade, N.S.						1	98	2	2	6
87	Port Williams, N.S.						3	592			15
88	Powell River, B.C.						1	71	10		9
89	Prince Rupert, B.C.	126	131,168	3,260		7,077	420	55,443	6,270		4,231
90	Pugwash, N.S.										
91	Quebec, Que.	144	562,771	15,551	10,723	16,698					
92	Richibucto, N.B.										
93	Rimouski, Que.	27	192,149			6,920					
94	River Hebert, N.S.										
95	St. Andrews, N.B.						46	1,893	650		149
96	St. George, N.B.						3	4	2		3
97	St. John, N.B.	150	535,063	183,272	64,883	17,582	92	31,025	57,288		624
98	St. Martins, N.B.										
99	St. Stephen, N.B.						1	32	1		2
100	Sackville, N.B.						3	529	1,169		20
101	Salmon River, N.S.	6	399	759		32					
102	Sandy Point, N.S.	4	1,542	1,585		41	5	482	659		32
103	Sheet Harbour, N.S.										
104	Shelburne, N.S.	4	480	889		24	18	986	744		117
105	Sherbrooke, N.S.										
106	Shippegan, N.B.						84	1,185	225		359
107	Shusharti Bay, B.C.										
108	Sidney, B.C.	1	98	262		13	19	2,004	570	901	115
109	Sorel, Que.	1	2,725	1,072		38					
110	Souris, P.E.I.						8	587	302		113
111	Steveston, B.C.						18	1,821	363		290
112	Stickeen, B.C.						10	835	165		59
113	Summerside, P.E.I.	6	2,154	922		126	2	197	331		11
114	Sydney, N.S.	50	186,007	421,994		2,322	31	27,202	49,185		576
115	Three Rivers, Que.	1	2,371	1,000		33					
116	Tignish, P.E.I.						3	94	23		45
117	Truro, N.S.										
118	Tusket, N.S.										

from Sea, at each Port and Outport, during the Fiscal Year ended March 31, 1917.

FOREIGN.					IN BALLAST.									
					BRITISH.			CANADIAN.			FOREIGN.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
					5	11,902	151	1	96	4	6	3,158	48	60
					1	35	5							61
2	4,711	9,166		56	315	966,226	14,950	1	2,263	25	23	73,915	1,006	62
														63
								1	39	8				64
46	23,856	4,982	4,000	611	37	14,334	299	94	11,982	667	607	243,244	4,686	65
								2	88	8	1	1,472	21	66
					1	2,263	26				27	12,633	286	67
2	2,157	4,274		32	1	1,142	14	88	26,042	892	60	13,721	330	68
12	3,721	1,839		218	1	2,577	55	5	322	31	14	1,751	48	69
2	109	12		30							2	141	36	70
4	49	114		8				108	11,174	683	24	441	64	71
31	45,220			738	502	100,113	4,511	208	42,933	2,522	70	14,408	1,268	72
7	5,588	3,166	328	220				3	417	14	1	69	10	73
					6	7,386	100	25	11,064	124	62	19,507	883	74
10	2,404	3,910		75	4	8,539	100				20	9,733	210	75
1	58	15		5				1	44	3				76
					2	5,506	60				5	5,788	90	77
								2	798	9	6	2,610	146	78
								2	114	8	1	253	6	79
1	399	500	418	10										80
35	3,208	2,156		519	1	48	5	2	1,149	60	12	1,142	155	81
3	282	33		59										82
								3	34	11	3	200	43	83
3	122	130		12	1	2,094	24	6	577	117	13	4,564	205	84
								4	499	53	9	246	105	85
								5	490	29				86
1	173			5										87
64	34,609	20,110	888	1,510	15	41,578	621	4	285	28	37	15,069	680	88
760	210,498	14,274	1	8,306	14	19,728	1,001	67	47,602	1,965	124	51,801	3,202	89
											4	4,522	69	90
1	1,379	151		22	8	7,690	143				11	14,603	250	91
											8	1,188	46	92
					1	1,940	24	9	9,100	154	10	10,583	163	93
								1	77	3				94
396	16,048	11,116		1,544				240	16,077	1,045	703	33,824	3,486	95
4	682	590		14				7	116	12	100	6,343	374	96
207	312,925	64,208	8,027	11,559	108	406,503	5,926	97	2,481	320	424	53,126	1,592	97
1	430	4		3				21	7,755	88	22	3,018	184	98
81	5,811	10,200		201				29	2,247	153	33	902	104	99
1	241	413		6										100
											4	59	11	101
66	6,236	3,468		1,272	1	168	6				85	7,156	1,698	102
											1	196	7	103
20	1,690	571		358				2	71	22	24	3,193	462	104
								1	357	6	2	371	13	105
3	634	1,137		37										106
3	1,557	76		65							4	80	28	107
17	2,711	2,868	4	74				21	882	80	36	594	112	108
														109
					1	94	6	17	749	163	11	865	162	110
10	1,701	636		104				44	1,234	157	142	3,166	405	111
32	522	162		131							9	98	37	112
5	2,530	4,588		10										113
78	189,717	518,873		2,361	245	663,194	10,134	79	64,167	1,600	16	25,497	382	114
					13	32,934	555	6	8,660	108	3	4,485	84	115
														116
								1	283	5	3	626	16	117
1	86	220		18							2	188	44	118

No. 4.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

Number.	Ports and Outports.	WITH CARGOES.									
		BRITISH.					CANADIAN.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
119	Union Bay, B.C.										
120	Vancouver, B.C	205	544,878	197,435	151,751	21,447	560	812,385	83,614	33,861	30,454
121	Victoria, B.C.	353	481,293	15,857	3,596	27,061	144	191,418	14,926	126	6,222
122	Westport, N.S.						7	468	500		24
123	Weymouth, N.S.						9	948	636		45
124	White Rock, B.C.						17	469	2,423		31
125	Windsor, N.S.						17	10,065	2,804		75
126	Wolfville, N.S.						6	665			25
127	Yarmouth, N.S	10	2,848	5,259		69	228	145,985	24,398		13,273
128	York Factory, Man	1	1,004	300		42					
	Total	1,928	4,691,442	1,375,673	313,758	160,067	3,324	1,541,133	425,116	38,044	73,768

from Sea, at each Port and Outport, during the Fiscal Year ended March 31, 1917.

FOREIGN.					IN BALLAST.									
					BRITISH.			CANADIAN.			FOREIGN.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
.....	.....	.....	.....	.....	22	78,773	1,571	25	15,469	242	106	63,091	937	119
477	526,761	532,550	82,991	14,559	22	46,928	1,792	147	19,153	1,089	201	92,995	3,182	120
557	723,650	54,855	20,735	30,319	68	262,456	11,721	264	30,298	1,579	249	286,769	8,884	121
.....	.....	.....	.....	.....	.....	.....	.....	4	72	8	.....	.....	.....	122
1	121	100	.....	4	.....	.....	.....	8	870	43	11	1,806	75	123
20	477	54	.....	64	.....	.....	.....	52	847	124	51	762	121	124
7	2,904	2,499	.....	36	.....	.....	.....	55	67,979	403	36	33,136	166	125
3	553	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	126
40	7,212	4,255	.....	877	.....	.....	.....	12	1,151	122	90	3,688	957	127
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	128
3,749	2,442,979	1,763,929	117,497	85,389	1,814	3,619,689	70,126	2,671	593,971	23,745	5,680	1,900,567	58,845	

No. 5.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

ABSTRACT BY

Number.	Countries from which Arrived.	WITH CARGOES.									
		BRITISH.					CANADIAN.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
1	United Kingdom	549	2,474,510	401,555	129,806	69,016	160	18,993	14,388	402	742
2	Australia	38	192,000	36,966	38,744	5,977					
3	B. South Africa	1	2,304	1,048		42					
4	B. West Africa										
5	B. W. Indies	85	158,710	117,080	32,738	9,780	98	13,559	24,461		640
6	B. Oceania, other										
7	B. Straits Settlements										
8	Egypt										
9	Figi Islands	2	4,366	7,303		72					
10	Gibraltar										
11	Malta										
12	Newfoundland	406	349,473	408,471		12,773	115	36,098	51,826	100	1,601
13	Brazil										
14	Canary Islands										
15	Chili	2	8,075			144					
16	China	21	125,883	18,354	36,302	4,046	4	11,254	16,326	20,626	189
17	Cuba	1	3,043	4,900		67	1	147			5
18	Denmark										
19	Dutch E. Indies	1	3,048	6,000		41					
20	France						1	2,263	200		26
21	French Africa										
22	Greece										
23	Greenland and Iceland										
24	Hawaii										
25	Holland										
26	Italy										
27	Japan	24	157,365	40,769	75,374	6,882	1	2,798	3,257	4,684	49
28	Mexico						4	6,188	7,933		97
29	Nicaragua										
30	Norway										
31	Panama										
32	Peru	8	22,286	44,792		241	1	1,384	2,776		23
33	Philippines	2	8,941	4,667	794	171	1	2,804	4,450	8,000	48
34	Portugal						14	1,367	2,310		89
35	Russia						3	6,423	9,016		120
36	San Domingo										
37	St. Pierre	3	2,640	2,530		45	6	528	660		47
38	Sea Fisheries	85	8,113	2,612		1,946	1,249	44,518	32,687		11,669
39	Spain	3	4,591	10,555		63	4	396	670		27
40	United States	697	1,166,094	268,071		48,761	1,662	1,392,413	254,156	4,232	58,396
41	Sea Cable and Admiralty										
	Total	1,928	4,691,442	1,375,673	313,758	160,067	3,324	1,541,133	425,116	38,044	73,768

SESSIONAL PAPER No. 11a

from Sea, in the Dominion of Canada during the Fiscal Year ended March 31, 1917.

COUNTRIES.

IN BALLAST.													
FOREIGN.					BRITISH.			CANADIAN.			FOREIGN.			
Number o Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
27	23,370	7,362	.....	492	568	1,845,357	27,270	36	27,476	437	213	221,032	3,766	1
.....	.....	.....	.....	.....	19	59,939	1,246	.....	.....	.....	3	2,264	33	2
.....	.....	.....	.....	.....	1	2,308	45	.....	.....	.....	4	3,431	55	3
.....	.....	.....	.....	.....	2	4,612	87	.....	.....	.....	.....	.....	.....	4
19	12,102	19,014	.....	375	8	13,863	191	.....	.....	.....	2	2,257	42	5
.....	.....	.....	.....	.....	1	4,921	194	.....	.....	.....	.....	.....	.....	6
7	18,971	7,673	5,727	309	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
.....	.....	.....	.....	.....	6	26,305	598	.....	.....	.....	.....	.....	.....	8
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9
.....	.....	.....	.....	.....	51	143,589	2,109	.....	.....	.....	9	16,706	256	10
.....	.....	.....	.....	.....	1	2,475	29	.....	.....	.....	.....	.....	.....	11
79	197,496	484,414	.....	2,396	552	121,677	5,509	338	120,164	5,007	16	8,754	265	12
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2,397	46	13
.....	.....	.....	.....	.....	1	384	8	.....	.....	.....	1	689	17	14
3	7,375	10,080	.....	108	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
34	140,142	7,228	16,377	2,897	23	144,031	8,603	.....	.....	.....	.....	.....	.....	16
.....	.....	.....	.....	.....	1	393	7	1	475	8	.....	.....	.....	17
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71	16,423	455	18
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19
2	1,959	166	.....	32	172	527,046	8,171	2	2,534	32	49	42,703	798	20
.....	.....	.....	.....	.....	9	30,325	545	.....	.....	.....	4	5,192	87	21
.....	.....	.....	.....	.....	6	20,576	440	.....	.....	.....	.....	.....	.....	22
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27	4,949	175	23
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1,936	25	24
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	5,465	95	25
.....	.....	.....	.....	.....	26	67,803	907	1	396	8	21	67,273	864	26
62	203,813	53,818	41,725	5,165	4	11,846	177	.....	.....	.....	9	27,106	441	27
2	6,081	14,980	.....	64	2	7,595	83	.....	.....	.....	.....	.....	.....	28
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1,671	28	29
1	989	.....	.....	14	.....	.....	.....	1	3,007	37	9	8,479	131	30
.....	.....	.....	.....	.....	1	124	14	.....	.....	.....	.....	.....	.....	31
7	20,042	36,558	.....	247	.....	.....	.....	.....	.....	.....	.....	.....	.....	32
1	3,192	2,685	2,648	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	33
4	1,978	812	.....	43	6	14,173	187	.....	.....	.....	9	2,697	142	34
9	23,810	8,232	14,764	352	1	2,615	42	.....	.....	.....	4	14,534	258	35
15	13,262	25,925	.....	319	.....	.....	.....	.....	.....	.....	.....	.....	.....	36
15	3,301	880	.....	303	16	1,056	76	15	1,251	74	25	5,400	550	37
1,140	156,554	19,435	.....	11,706	90	11,698	1,307	314	18,192	3,920	527	26,626	6,765	38
29	10,228	16,897	.....	260	3	6,248	72	1	3,122	86	9	9,736	161	39
2,292	1,596,748	1,047,770	36,256	60,246	230	522,903	11,423	1,961	417,270	14,125	4,646	1,392,856	42,873	40
1	1,566	.....	.....	24	14	25,827	786	1	84	11	14	9,991	517	41
3,749	2,442,979	1,763,929	117,497	85,389	1,814	3,619,689	70,126	2,671	593,971	23,745	5,680	1,900,567	58,845	

No. 5.—STATEMENT of Vessels, British, Canadian and Foreign, entered Inwards

RECAPIT-

—	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.
			Tons Weight.	Tons Measurement.	
With Cargo—					
British	1,928	4,691,442	1,375,673	313,758	160,067
Canadian	3,324	1,541,133	425,116	38,044	73,768
Foreign	3,749	2,442,979	1,763,929	117,497	85,389
Total	9,001	8,675,554	3,564,718	469,299	319,224

from Sea, in the Dominion of Canada during the Fiscal Year, ended March 31,1917

ULATION.

	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.
			Tons Weight.	Tons Measurement.	
In Ballast—					
British	1,814	3,619,689			70,126
Canadian	2,671	593,971			23,745
Foreign	5,680	1,900,567			58,845
Total	10,165	6,114,227			152,716
Grand total	19,166	14,789,781	3,564,718	469,299	471,940

No. 6.—Statement of Vessels, British, Canadian and Foreign entered Outwards

Number.	Ports and Outports.	WITH CARGOES.									
		British.					Canadian.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
1	Albert, N.B.	1	246	492	282	7	6	747	1,494		23
2	Alberton, P.E.I.										
3	Alert Bay, B.C.										
4	Amherst, N.S.										
5	Annapolis Royal, N.S.						3	614	1,570	1,625	18
6	Anyox, B.C.						17	12,328	9,966		252
7	Arichat, N.S.						6	546	670		44
8	Baddeck, N.S.						53	2,995	28		654
9	Barrington Passage, N.S.						2	196	40		15
10	Barton, N.S.						19	2,063	2	3,412	109
11	Bathurst, N.B.	5	10,334			203					
12	Bear River, N.S.	1	268		547	7	19	2,651		6,528	125
13	Belliveau's Cove, N.S.	3	597		1,839	18	2	154		307	9
14	Bridgewater, N.S.	13	3,588	7,210		85	18	3,572	6,494		104
15	Buetouche, N.B.										
16	Campbellton, N.B.	10	27,307		57,900	375					
17	Campo Bello, N.B.						2	39	19		9
18	Canning, N.S.						2	596			14
19	Canso, N.S.	4	270	472		21	12	1,113	1,128	40	62
20	Caraquet, N.B.										
21	Cardigan, P.E.I.	1	76	111	2	6	5	473	712		28
22	Charlottetown, P.E.I.	8	5,610	3,420	12	106	44	27,924	5,717	270	1,517
23	Chatham, N.B.	18	24,731		59,452	295					
24	Chemainus, B.C.	1	1,920		3,183	21	18	3,937	1,933	1,150	151
25	Chester, N.S.						3	272	475		15
26	Cheticamp, N.S.										
27	Chicoutimi, Que.	9	20,322	46,151		344					
28	Church Point, N.S.						9	1,114		2,288	47
29	Clark's Harbour, N.S.										
30	Clementsport, N.S.						12	1,576	3,315	4,144	69
31	Dalhousie, N.B.	4	7,390		20,457	98					
32	Digby, N.S.						14	7,456	678	150	58
33	Dorchester, N.B.	1	296		783	6	1	124		330	4
34	Fredericton, N.B.										
35	Gaspé, Que.	10	9,276	200	8,200	162	11	2,000		2,600	73
36	Georgetown, P.E.I.	7	384	375	1	31					
37	Glace Bay, N.S.						82	4,747	8,390		320
38	Halifax, N.S.	489	1,552,260	482,772	270,877	37,969	445	87,100	34,875	4,420	6,731
39	Hantsport, N.S.										
40	Hillsboro, N.B.						8	7,574	10,250		32
41	Indian Island, N.B.										
42	Isaacs Harbour, N.S.						1	99	145		5
43	Joggins Mines, N.S.	4	781	1,550		21	10	958	1,687		37
44	Kinsport, N.S.						6	3,608	3,272		107
45	Ladner, B.C.						1	128	154		8
46	Ladysmith, B.C.						45	12,474	11,065		255
47	LaHave, N.S.	3	1,000	1,755		20	17	1,674	3,015		103
48	Liverpool, N.S.	9	1,814	2,896		52	49	6,647	11,754		266
49	Lockeport, N.S.						51	1,936	1,002		466
50	Lord's Cove, N.S.						98	776	1,108		196
51	Louisburg, N.S.	145	240,684	473,470		4,294	131	93,365	161,591		2,230
52	Lower East Pubnico, N.S.						11	713	322		130
53	Lunenburg, N.S.	4	988	1,735		26	44	6,073	10,710		253
54	Magdalen Island, Que.	7	533	701		39					
55	Mahone Bay, N.S.						7	870	1,540		41
56	Maitland, N.S.						7	795	1,263		35
57	Meteghan River, N.S.						9	975	7	2,033	45
58	Moncton, N.B.	6	14,952	29,326		190	1	281	550		5

for Sea, at each Port and Outport, during the Fiscal Year ended March 31, 1917

Foreign.					In Ballast.									
					British.			Canadian.			Foreign.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
														1
								3	44	14				2
								3	355	104	36	5,500	313	3
4	2,091	3,470		42										4
2	18	9	9	5										5
6	7,640	4,254		45				51	19,342	627	101	77,824	945	6
12	1,014	898		106				78	1,585	513	4	360	68	7
22	6,288	12		244				3	61	13				8
26	449	125		106				6	60	24	43	1,034	118	9
														10
17	10,449	470		250				11	143	50				11
														12
														13
47	20,001	29,782		388				2	287	15	6	778	97	14
											8	1,428	50	15
58	41,053		55,286	384										16
19	200	311		38				117	20,476	1,151	20	972	92	17
														18
21	2,109	1,748	100	264	54	9,108	772	60	5,225	1,043	220	10,226	2,745	19
								157	2,249	659				20
														21
								4	1,421	35				22
108	51,621		124,158	1,168										23
50	5,710	945	12,539	155				3	262	27	5	174	25	24
7	90	18		25				22	241	72	1	30	4	25
1	97	270		6										26
14	19,865	40,188		319										27
														28
41	575	235		116				6	274	33	25	394	180	29
														30
11	10,224		27,728	205										31
8	147	27		37							3	540	51	32
1	260		720	6										33
								3	952	18	12	2,574	59	34
31	19,967	1,700	18,000	385										35
														36
4	62			30				77	3,643	196				37
258	300,706	101,208	95,320	5,735	64	268,367	4,961	35	31,139	689	67	119,201	2,051	38
6	1,300	2,170		29							10	3,008	215	39
11	4,747	7,961		64										40
97	953	1,036		168	5	8	10				3	165	15	41
1	74	125		6				4	50	19	14	580	151	42
6	1,201	2,245		31										43
1	145			4										44
1	316	131		18							1	316	11	45
38	29,000	12,221		1,025				40	2,496	326	127	28,288	756	46
2	161	25		40				80	6,487	1,364	14	924	231	47
195	21,496	30,335		2,594				1	20	5	2	191	16	48
40	2,302	1,485		557										49
86	867	1,444		172				117	3,235	416	14	747	62	50
253	176,413	381,628		3,961	11	20,951	645	9	769	128	25	9,508	472	51
23	915	347		238				21	955	250	18	1,275	347	52
3	441	598		31	1	250	7	276	18,322	3,647	30	2,566	512	53
13	957	1,175		63										54
								6	411	61				55
														56
														57
6	3,158	6,105		48										58

No. 6.—Statement of Vessels, British, Canadian and Foreign, entered Outwards

Number.	Ports and Outports.	WITH CARGOES.									
		British.					Canadian.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
59	Montague Bridge, P.E.I.	2	90	91		9	4	361	665		23
60	Montreal, Que.	506	1,805,977	2,276,751	549,430	36,391	7	6,967	7,971	1,840	112
61	Moose Factory, Man.						1	1,541	9	2	50
62	Murray Harbour, P.E.I.										
63	Nanaimo, B.C.	38	27,761	7,805		1,241	135	22,282	26,993		1,210
64	Newcastle, N.B.	1	2,263		5,000	26	1	99		250	5
65	Newport, B.C.	1	1,142	2,500		16	115	38,578	60,486		1,111
66	New Westminster, B.C.	1	2,577	1,240		55	4	351	398		26
67	North East Harbour, N.S.										
68	North Head, N.B.						48	1,394	708		122
69	North Sydney, N.S.	225	119,745	1,235		7,411					
70	Ocean Falls, B.C.	1	1,625	20		78					
71	Parrsboro, N.S.	20	15,025	24,350		221	46	10,145	16,830		248
72	Paspebiac, Que.	5	8,583	43	15,906	103	2	259		545	7
73	Percé, Que.	3	123	439		19	1	92	213		6
74	Pictou, N.S.	4	10,248	18,000		119	1	92	134		4
75	Port Alberni, B.C.						3	1,197		2,988	12
76	Port Clyde, N.S.	1	272	406		6	1	97		170	5
77	Port Hawkesbury, N.S.	1	248	380		6	40	21,522	2,616		1,126
78	Port Hood, N.S.										
79	Port La Tour, N.S.										
80	Port Mulgrave, N.S.	1	2,094	1,449		24					
81	Port Simpson, B.C.										
82	Port Wade, N.S.						5	490	350	400	30
83	Port Williams, N.S.						1	299	270		7
84	Powell River, B.C.	15	41,446	21,574	6,657	624	1	1,904	7		75
85	Prince Rupert, B.C.	34	52,583	2,335		2,567	79	80,912	13,378		3,330
86	Pugwash, N.S.										
87	Quebec, Que.	107	283,116	28,477	29,508	5,467					
88	Richibucto, N.B.										
89	Rimouski, Que.	3	4,854	5,628		67	7	6,186	10,703		114
90	River Hebert, N.S.	1	209	400		6					
91	St. Andrews, N.B.						124	4,435	1,656		358
92	St. George, N.B.	1	1,808		6,635	24	3	147		240	9
93	St. John, N.B.	206	710,957	946,413	185,332	13,813	78	4,549	1,054	10,350	195
94	St. Martins, N.B.	1	209		573	6	19	8,376		19,452	78
95	St. Peters, N.S.										
96	St. Stephen, N.B.						4	30	48		9
97	Sackville, N.B.										
98	Salmon River, N.S.	1	71		966	5	4	188	192		14
99	Sandy Cove, N.S.										
100	Sandy Point, N.S.	6	1,913	2,135		52	13	1,789	1,180	1,755	76
101	Shediac, N.B.						5	467			21
102	Sheet Harbour, N.S.						1	17			4
103	Shelburne, N.S.	5	576	490	490	29	12	1,371	150	1,239	68
104	Sherbrooke, N.S.	1	357			6	2	456			11
105	Shippegan, N.B.						2	186	400		9
106	Shusharti Bay, B.C.										
107	Sidney, B.C.						10	52	37		21
108	Sorel, Que.						4	427	413		21
109	Souris, P.E.I.	2	142	150	21	11	5	430	401	96	25
110	Steveston, B.C.						43	1,242	873		152
111	Stickeen, B.C.										
112	Summerside, P.E.I.	1	276	349		20	17	5,534	1,910		359
113	Sydney, N.S.	429	441,786	882,330		7,572	163	76,185	143,393		2,194
114	Three Rivers, Que.	14	32,934	15,886		571	5	8,660	15,934		124
115	Tignish, P.E.I.										
116	Truro, N.S.						2	255			10

SESSIONAL PAPER No. 11a

for Sea at each Port and Outport, during the Fiscal Year ended March 31, 1917.

FOREIGN.					IN BALLAST.									
					BRITISH.			CANADIAN.			FOREIGN.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
														59
49	109,602	199,535	400	1,633	1	3,149	42	3	3,050	61	33	31,828	576	60
														61
								4	113	24				62
497	292,436	360,085		4,231	2	250	54	64	6,935	556	184	17,146	1,376	63
45	16,961		34,600	300										64
47	13,856	13,964		264				15	3,103	264	14	2,479	76	65
22	5,308	2,877		238				1	3	2	5	289	43	66
3	475	12	560	36				3	99	25	2	141	44	67
12	221	349		27				134	20,967	1,192	10	173	26	68
					285	111,453	3,769	150	43,928	2,364	100	60,463	2,108	69
								2	2,452	103	10	9,273	1,931	70
48	15,532	28,345		332				1	9	10	37	9,105	709	71
25	10,856	6	26,832	244										72
														73
7	7,365	11,834		118							1	199	8	74
5	2,630		3,799	130							2	630	39	75
2	459	626		12				1	15	4				76
27	3,295	2,326		452				9	528	110	16	2,763	227	77
3	282	33		61										78
								3	34	11	3	200	43	79
4	4,477	7,588		104				7	617	127	14	4,768	226	80
								3	1,899	81	9	246	105	81
1	6	5	5	3										82
														83
90	40,476	30,307		1,962							18	9,321	218	84
30	17,627	884		1,056	50	6,028	1,037	424	20,012	2,821	853	132,956	10,442	85
6	5,057	10,800		79										86
14	23,912	9,494	9,865	408	9	1,800	216				13	14,610	331	87
8	1,306		3,058	47										88
10	10,583	12,622		155	27	192,149	6,920							89
														90
672	12,563	14,128		1,742				125	11,993	755	415	38,207	3,149	91
36	7,627	14,383	483	150				1	9	1	74	2,240	291	92
593	360,688	88,175	112,691	12,492	7	19,003	287	41	10,910	326	37	14,833	417	93
12	3,432		9,521	49				2	27	6	20	1,580	220	94
								1	11	3				95
33	691	1,344		76				13	1,870	115	70	3,657	192	96
1	241	410		6										97
					2	21	8	1	31	2				98
2	12	11		7							1	11	3	99
70	6,998	3,614	864	1,319				4	59	26	83	7,066	1,656	100
1	760			16										101
1	196	345	475	7										102
18	2,000	528	851	278				17	555	129	31	7,604	615	103
5	1,499	418	468	28										104
1	92	125		22				93	1,293	399				105
								1	60	8	7	1,637	73	106
16	365	74		64				19	561	63	30	436	71	107
														108
1	44	120		5	1	18	6	36	1,436	335	11	865	162	109
113	3,882	3,904		411				12	289	53	41	1,015	122	110
20	267	12		75							31	1,163	149	111
														112
99	128,620	249,337		2,273	60	226,381	2,940	12	13,792	258	59	181,446	2,139	113
3	4,485	12,852		84	1	2,371	33							114
								4	206	49				115
3	789			18										116

No. 6.—STATEMENT of Vessels, British, Canadian and Foreign, entered Outwards

Number.	Ports and Outports.	WITH CARGOES.									
		BRITISH.					CANADIAN.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
117	Tusket, N.S.										
118	Union Bay, B.C.	40	156,065	53,302		3,059	8	6,330	5,927		204
119	Vancouver, B.C.	413	713,268	122,482	136,571	37,389	243	311,780	78,073	31,616	11,831
120	Victoria, B.C.	48	149,009	2,841	296	5,808	296	483,998	10,707		17,348
121	Westport, N.S.						8	173	109		17
122	Weymouth, N.S.	3	492		1,320	18	22	2,864	71	5,320	118
123	White Rock, B.C.						60	1,369	23,095		77
124	Windsor, N.S.						97	94,947	146,883	3,655	674
125	Yarmouth, N.S.	1	336	400		7	194	152,697	27,935		11,873
126	York Factory, Man.	1	1,004			42					
	Total	2,906	6,516,811	5,472,537	1,362,240	167,284	3,247	1,667,005	899,113	109,215	68,188

for Sea at each Port and Outport during the Fiscal Year ended March 31, 1917.

Foreign.					IN BALLAST.									
					British.			Canadian.			Foreign.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
.....	.....	.....	.....	.....	.....	.....	.....	1	11	4	3	274	66	117
71	67,028	74,848	.....	667	.....	.....	.....	9	2,553	86	43	3,242	389	118
365	302,522	212,788	63,569	11,688	45	95,930	3,626	165	36,087	1,553	313	310,178	6,337	119
228	262,519	1,591	261	12,224	114	359,694	14,421	346	232,472	8,779	541	744,601	26,614	120
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	121
15	4,414	2,338	4,243	108	.....	.....	.....	.....	.....	.....	1	12	2	122
62	1,096	4,994	.....	168	.....	.....	.....	18	335	46	10	157	29	123
48	37,011	53,386	5,001	232	.....	.....	.....	.....	.....	.....	.....	.....	.....	124
98	8,109	4,707	.....	982	.....	.....	.....	59	2,511	633	25	4,036	908	125
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	126
5,092	2,545,754	2,070,825	611,406	76,191	739	1,316,931	39,754	2,999	541,339	32,883	3,979	1,889,453	71,718	

No. 7.—STATEMENT of Vessels, British, Canadian and Foreign, entered Outwards

ABSTRACT BY

Number.	Countries to which Departed.	WITH CARGOES.									
		BRITISH.					CANADIAN.				
		Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew, Number.
				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
1	United Kingdom	761	2,903,956	2,048,596	704,287	63,984	107	21,120	32,704	2,232	588
2	Australia	65	268,748	86,870	103,738	6,946	....	.....	.....	.....	.....
3	British South Africa	19	53,395	79,493	33,800	846	....	.....	.....	.....	.....
4	British Guiana	26	73,984	114,250	.....	2,445	3	294	479	672	16
5	British West Indies	15	4,090	5,540	3,425	109	45	6,475	9,357	4,518	286
6	British Oceania, other	4	15,360	6,202	3,183	459	....	.....	.....	.....	.....
7	Bermuda	1	7,029	.....	.....	234	....	.....	.....	.....	.....
8	Egypt	1	2,749	5,106	.....	33	....	.....	.....	.....	.....
9	Fiji Islands	....	.....	.....	.....	.....	....	.....	.....	.....	.....
10	Gibraltar	11	28,202	51,480	.....	352	....	.....	.....	.....	.....
11	Newfoundland	687	233,657	101,707	15	12,888	381	114,945	163,335	142	4,974
12	New Zealand	3	18,293	.....	.....	358	....	.....	.....	.....	.....
13	Argentina	2	1,006	1,994	.....	14	....	.....	.....	.....	.....
14	Azores and Madeira	4	1,293	2,511	.....	28	....	.....	.....	.....	.....
15	Brazil	6	1,584	1,841	.....	40	1	308	350	.....	7
16	Canary Islands	1	384	.....	939	8	1	449	.....	1,047	9
17	Chili	....	.....	.....	.....	.....	....	.....	.....	.....	.....
18	China	29	188,416	53,870	76,097	9,677	1	900	19	.....	14
19	Cuba	3	822	975	.....	21	15	6,412	6,350	3,104	172
20	Denmark	....	.....	.....	.....	.....	....	.....	.....	.....	.....
21	Danish West Indies	....	.....	.....	.....	.....	....	.....	.....	.....	.....
22	France	242	661,576	1,116,201	94,415	9,427	12	12,822	31,930	300	245
23	Greece	3	10,758	7,156	.....	167	....	.....	.....	.....	.....
24	Holland	....	.....	.....	.....	.....	....	.....	.....	.....	.....
25	Italy	5	11,590	21,745	.....	151	....	.....	.....	.....	.....
26	Japan	3	14,921	1,580	4,905	584	....	.....	.....	.....	.....
27	Mexico	....	.....	.....	.....	.....	....	.....	.....	.....	.....
28	Norway	....	.....	.....	.....	.....	....	.....	.....	.....	.....
29	Panama	....	.....	.....	.....	.....	....	.....	.....	.....	.....
30	Peru	7	19,200	3,446	186	237	1	180	273	.....	14
31	Philippines	9	56,326	6,231	938	976	....	.....	.....	.....	.....
32	Portugal	....	.....	.....	.....	.....	....	.....	.....	.....	.....
33	Porto Rico	....	.....	.....	.....	.....	28	3,045	4,555	1,147	153
34	Russia	3	7,669	1,650	.....	104	8	22,471	41,102	21,335	382
35	St. Pierre	9	621	985	21	46	13	1,022	1,067	250	68
36	San Domingo	....	.....	.....	.....	.....	....	.....	.....	.....	.....
37	Sea Fisheries	40	4,474	2,085	.....	1,029	400	22,666	2,414	.....	5,039
38	Spain	....	.....	.....	.....	.....	....	.....	.....	.....	.....
39	Sweden	....	.....	.....	.....	.....	....	.....	.....	.....	.....
40	United States	647	966,781	306,726	31,684	40,107	2,228	1,447,107	594,711	74,468	56,146
41	Sea Cable and Admiralty	300	959,927	1,444,297	304,607	16,014	3	6,789	10,467	.....	75
	Total	2,906	6,516,811	5,472,537	1,362,240	167,284	3,247	1,667,005	899,113	109,215	68,188

for Sea, in the Dominion of Canada during the Fiscal Year ended March 31, 1917.

COUNTRIES.

IN BALLAST.													
FOREIGN.					BRITISH.			CANADIAN.			FOREIGN.			
Number of Vessels.	Tons Register.	Quantity of Freight. Tons Weight.	Quantity of Freight. Tons Measurement.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number of Vessels.	Tons Register.	Crew, Number.	Number.
494	383,439	490,134	306,104	6,423	36	224,325	7,783	82	3,886	244	25	7,300	235	1
					4	19,323	663							2
9	7,555	968	9,811	96							4	3,708	56	3
														4
19	12,761	18,410	1,478	381										5
														6
														7
														8
2	1,182		2,847	19							1	491	10	9
29	103,230	174,464		1,322										10
26	6,077	5,422		341	275	233,505	4,966	189	60,366	2,725	89	194,821	2,620	11
														12
18	22,101	7,980	29,716	262										13
														14
														15
3	1,795	1,119	2,879	21										16
2	6,384	1,500		74										17
13	54,438	864	3,777	1,148	30	184,269	8,578				13	56,446	1,186	18
8	3,903	4,744	2,146	59										19
17	41,475			635										20
1	161	100		11										21
88	129,656	211,271	61,647	2,094	15	37,128	461	1	63	9	11	13,801	196	22
														23
51	95,878	43,941		1,185										24
17	49,279	108,091		607										25
20	57,021	12,489	3,832	1,186							34	125,816	3,613	26
								5	7,573	120				27
22	53,735	7,430		604										28
					1	124	14							29
1	1,188	2,186	4,109	36										30
					1	6,522	108							31
4	1,951	3,300	1,292	38										32
														33
37	104,991	158,815	32,742	1,610							2	6,265	116	34
19	4,104	5,150		426	7	493	36	2	202	23	26	5,530	559	35
											11	10,094	245	36
562	30,731	13,997		7,873	146	16,275	2,419	1,395	49,832	12,389	1,302	50,293	14,085	37
2	2,037	3,446		32										38
3	7,700			73										39
3,616	1,358,224	795,004	149,026	49,211	200	526,728	13,169	1,320	418,972	17,311	2,459	1,414,418	48,737	40
9	4,758			424	24	68,239	1,557	5	445	62	2	470	60	41
5,092	2,545,754	2,070,825	611,406	76,191	739	1,316,931	39,754	2,999	541,339	32,883	3,979	1,889,453	71,718	

No. 7.—STATEMENT of Vessels, British, Canadian and Foreign, entered Outwards

RECAPITU

—	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.
			Tons Weight.	Tons Measurement.	
With Cargoes—					
British	2,906	6,516,811	5,472,537	1,362,240	167,284
Canadian	3,247	1,667,005	899,113	109,215	68,188
Foreign	5,092	2,545,754	2,070,825	611,406	76,191
Total	11,245	10,729,570	8,442,475	2,082,861	311,663

for Sea, in the Dominion of Canada, during the Fiscal Year ended March 31, 1917.

LATION.

—	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.
			Tons Weight.	Tons Measurement.	
In Ballast—					
British	739	1,316,931			39,754
Canadian	2,999	541,339			32,883
Foreign	3,979	1,889,453			71,718
Total	7,717	3,747,723			144,355
Grand Total	18,962	14,477,293	8,442,475	2,082,861	456,018

No. 8.—Summary Statement of Sea-going Vessels entered and cleared at each Port and Outport in the Dominion of Canada during the Twelve Months ended March 31, 1917.

RECAPITULATION BY PORTS AND OUTPORTS.

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.		Foreign.		Total.		British.		Foreign.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Albert, N.B	4	531			4	531	7	993			7	993
Alberton, P.E.I	2	32			2	32	3	44			3	44
Alert Bay, B.C	3	355	36	5,606	39	5,961	3	355	36	5,500	39	5,855
Amherst, N.S	2	418	3	578	5	996			4	2,091	4	2,091
Annapolis Royal, N.S	5	846	2	18	7	864	3	614	2	18	5	632
Anyox, B.C	53	22,591	114	88,456	167	111,047	68	31,670	107	85,464	175	117,134
Arichat, N.S	77	2,857	15	1,223	92	4,080	84	2,131	16	1,374	100	3,505
Baddeck, N.S	41	2,104	12	3,345	53	5,449	56	3,056	22	6,288	78	9,344
Barrington Passage, N.S	8	256	69	1,483	77	1,739	8	256	69	1,483	77	1,739
Barton, N.S	19	2,036	1	92	20	2,128	19	2,063			19	2,063
Bathurst, N.B	20	10,521	17	10,449	37	20,970	16	10,477	17	10,449	33	20,926
Bear River, N.S	12	1,328	1	261	13	1,589	20	2,919			20	2,919
Belliveau's Cove, N.S	3	421			3	421	5	751			5	751
Bridgetown, N.S	3	352			3	352						
Bridgewater, N.S	10	2,105	54	21,297	64	23,402	33	7,447	53	20,779	86	28,226
Buctouche, N.B			4	566	4	566			8	1,428	8	1,428
Campbellton, N.B	5	11,232	15	16,009	20	27,241	10	27,307	58	41,053	68	68,360
Campo Bello, N.B	117	19,183	548	12,487	665	31,670	119	20,515	39	1,172	158	21,687
Canning, N.S	2	431			2	431	2	596			2	596
Canso, N.S	128	16,548	240	12,152	368	28,700	130	15,716	241	12,335	271	28,051
Caraquet, N.B	158	2,337			158	2,337	157	2,249			157	2,249
Cardigan, P.E.I							6	549			6	549
Charlottetown, P.E.I	54	30,839	13	5,109	67	35,948	56	34,955			56	34,955
Chatham, N.B	8	18,482	93	32,291	101	50,773	18	24,731	108	51,621	126	76,352
Chemainus, B.C	6	263	51	3,618	57	3,881	22	6,119	55	5,884	77	12,003
Chester, N.S	32	551	2	20	34	571	25	513	8	120	33	633
Chicoutimi, Que	8	18,494	7	10,678	15	29,172	9	20,322	14	19,865	23	40,187
Cheticamp, N.S									1	97	1	97
Church Point, N.S	6	980			6	980	9	1,114			9	1,114
Clarks Harbour, N.S	6	274	66	969	72	1,243	6	274	66	969	72	1,243
Clementsport, N.S	10	1,337			10	1,337	12	1,576			12	1,576
Dalhousie, N.B			37	26,215	37	26,215	4	7,390	11	10,224	15	17,614
Digby, N.S	13	3,720	15	1,183	28	4,903	14	7,456	11	687	25	8,143
Dorchester, N.B	2	268			2	268	2	420	1	260	3	680
Fredericton, N.B	3	952	12	2,574	15	3,526	3	952	12	2,574	15	3,526
Freeport, N.S	2	186			2	186						

Gaspe, Que	6	755	18	13,404	24	14,159	21	11,276	31	19,967	52	31,243
Georgetown, P.E.I	6	436			6	436	7	384			7	384
Glace Bay, N.S	149	7,695	4	62	153	7,757	159	8,390	4	62	163	8,452
Halifax, N.S	868	1,849,608	415	531,908	1,283	2,381,516	1,033	1,938,866	325	419,907	1,358	2,358,773
Hantsport, N.S	3	1,049	16	4,736	19	5,785			16	4,308	16	4,308
Hillsboro, N.B	5	4,612	8	3,352	13	7,964	8	7,574	11	4,747	19	12,321
Indian Island, N.B	5	8	100	1,118	105	1,126	5	8	100	1,118	105	1,126
Isaacs Harbour, N.S	3	190	15	654	18	844	5	149	15	654	20	803
Joggins Mines, N.S	2	255	5	1,064	7	1,319	14	1,739	6	1,201	20	2,940
Kentville, N.S	2	257			2	257						
Kingsport, N.S	4	2,327	1	145	5	2,472	6	3,608	1	145	7	3,753
Ladner, B.C	3	136			3	136	1	128	2	632	3	760
Ladysmith, B.C	101	15,576	159	59,205	260	74,781	85	14,970	165	57,288	250	72,258
La Have, N.S	100	10,291	18	1,445	118	11,736	100	9,161	16	1,085	116	10,246
Levis, Que	1	3,046			1	3,046						
Liverpool, N.S	13	2,056	183	16,124	196	18,180	59	8,481	197	21,687	256	30,168
Lockeport, N.S	47	2,073	41	2,242	88	4,315	51	1,936	40	2,302	91	4,238
Lord's Cove, N.B	334	4,880	122	1,753	456	6,633	215	4,011	100	1,614	315	5,625
Louisburg, N.S	272	306,821	274	167,333	546	474,154	296	355,769	278	185,921	574	541,690
Lower East Pubnico, N.S	30	1,622	39	2,159	69	3,781	32	1,668	41	2,190	73	3,858
Lunenburg, N.S	319	27,888	32	2,700	351	30,588	325	25,633	33	3,007	358	28,640
Magdalen Islands, Que	27	2,061	9	925	36	2,986	7	533	13	957	20	1,490
Mahone Bay, N.S	19	1,750			19	1,750	13	1,281			13	1,281
Maitland, N.S	2	198			2	198	7	795			7	795
Meteghan River, N.S	5	659			5	659	9	975			9	975
Moncton, N.B	8	12,478	6	3,158	14	15,636	7	15,233	6	3,158	13	18,391
Montague Bridge, P.E.I	2	134			2	134	6	451			6	451
Montreal, Que	510	1,819,624	25	78,626	535	1,898,250	517	1,819,143	82	141,430	599	1,960,573
Moose Factory, Man	1	1,541			1	1,541	1	1,541			1	1,541
Murray Harbour, P.E.I	4	113			4	113	4	113			4	113
Nanaimo, B.C	138	28,649	653	267,100	791	295,749	239	57,228	681	309,582	920	366,810
Newcastle, N.B	1	2,263	27	12,633	28	14,896	2	2,362	45	16,961	47	19,323
Newport, B.C	89	27,184	62	15,878	151	43,062	131	42,823	61	16,335	192	59,158
New Campbellton, N.S	2	88	1	1,472	3	1,560						
New Westminster, B.C	11	3,471	26	5,472	37	8,943	6	2,931	27	5,597	33	8,528
North East Harbour, N.S	3	82	4	250	7	332	3	99	5	616	8	715
North Head, N.B	189	23,773	28	490	217	24,263	182	22,361	22	394	204	22,755
North Sydney, N.S	927	248,029	101	59,628	1,028	307,657	660	275,126	100	60,463	760	335,589
Ocean Falls, B.C	7	4,132	8	5,657	15	9,789	3	4,077	10	9,273	13	13,350
Parrsboro, N.S	33	18,671	62	19,507	95	38,178	67	25,179	85	24,637	152	49,816
Paspebiac, Que	4	8,539	30	12,137	34	20,676	7	8,842	25	10,856	32	19,698
Perce, Que	2	124	1	58	3	182	4	215			4	215
Pictou, N.S	5	5,786	5	5,788	10	11,574	5	10,340	8	7,564	13	17,904
Port Alberni, B.C	3	1,078	6	2,610	9	3,688	3	1,197	7	3,260	10	4,457
Port Clyde, N.S	2	114	1	253	3	367	3	384	2	459	5	843
Port Elgin, N.B			1	399	1	399						
Port Hawkesbury, N.S	51	23,007	47	4,350	98	27,357	50	22,298	43	6,058	93	28,356
Port Hood, N.S			3	282	3	282			3	282	3	282
Port LaTour, N.S	3	34	3	200	6	234	3	34	3	200	6	234
Port Mulgrave, N.S	9	2,852	16	4,686	25	7,538	8	2,711	18	9,245	26	11,956
Port Simpson, B.C	4	499	9	246	13	745	3	1,899	9	246	12	2,145

No. 8.—Summary Statement of Sea-going Vessels entered and cleared at each Port in the Dominion of Canada during the Twelve Months ended March 31, 1917—*Concluded.*

RECAPITULATION BY PORTS AND OUTPORTS.

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.		Foreign.		Total.		British.		Foreign.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Port Wade, N.S.	6	588			6	588	5	490	1	6	6	496
Port Williams, N.S.	3	592	1	173	4	765	1	299			1	299
Powell River, B.C.	20	41,934	101	49,678	121	91,612	16	43,350	108	49,797	124	93,147
Prince Rupert, B.C.	627	253,941	884	262,299	1,511	516,240	587	159,535	883	150,583	1,470	310,118
Pugwash, N.S.			4	4,522	4	4,522			6	5,057	6	5,057
Quebec, Que.	152	570,461	12	15,982	164	586,443	116	284,916	27	38,522	143	323,438
Richibucto, N.B.			8	1,188	8	1,188			8	1,306	8	1,306
Rimouski, Que.	37	203,189	10	10,583	47	213,772	37	203,189	10	10,583	47	213,772
River Hebert, N.S.	1	77			1	77	1	209			1	209
St. Andrews, N.B.	286	17,970	1,099	49,872	1,385	67,842	249	16,428	1,087	50,770	1,336	67,198
St. George, N.B.	10	120	104	7,025	114	7,145	5	1,964	110	9,867	115	11,831
St. John, N.B.	447	975,072	631	366,051	1,078	1,341,123	332	745,419	630	375,521	962	1,120,940
St. Martins, N.B.	21	7,755	23	3,448	44	11,203	22	8,612	32	5,012	54	13,624
St. Peters, N.S.							1	11			1	11
St. Stephen, N.B.	30	2,279	114	6,713	144	8,992	17	1,900	103	4,348	120	6,248
Sackville, N.B.	3	529	1	241	4	770			1	241	1	241
Salmon River, N.S.	6	399	4	59	10	458	8	311			8	311
Sandy Cove, N.S.									3	23	3	23
Sandy Point, N.S.	10	2,192	151	13,392	161	15,584	23	3,761	153	14,064	176	17,825
Shediac, N.B.							5	467	1	760	6	1,227
Sheet Harbour, N.S.			1	196	1	196	1	17	1	196	2	213
Shelburne, N.S.	24	1,537	44	4,883	68	6,420	34	2,502	49	9,604	83	12,106
Sherbrooke, N.S.	1	357	2	371	3	728	3	813	5	1,499	8	2,312
Shippegan, N.B.	84	1,185	3	634	87	1,819	95	1,479	1	92	96	1,571
Shusharti Bay, B.C.			7	1,637	7	1,637	1	60	7	1,637	8	1,697
Sidney, B.C.	41	2,984	53	3,305	94	6,289	29	613	46	801	75	1,414
Sorel, Que.	1	2,725			1	2,725	4	427			4	427
Souris, P.E.I.	26	1,430	11	865	37	2,295	44	2,026	12	909	56	2,935
Steveston, B.C.	62	3,055	152	4,867	214	7,922	55	1,531	154	4,897	209	6,428
Stickeen, B.C.	10	835	41	620	51	1,455			51	1,430	51	1,430
Summerside, P.E.I.	8	2,351	5	2,530	13	4,881	18	5,810			18	5,810
Sydney, N.S.	405	940,570	94	215,214	499	1,155,784	664	758,144	158	310,066	822	1,068,210
Three Rivers, Que.	20	43,965	3	4,485	23	48,450	20	43,965	3	4,485	23	48,450
Tignish, P.E.I.	3	94			3	94	4	206			4	206
Truro, N.S.	1	283	3	626	4	909	2	255	3	789	5	1,044
Tusket, N.S.			3	274	3	274	1	11	3	274	4	285

Union Bay, B.C.	47	94,242	106	63,091	153	157,333	57	164,948	114	70,270	171	235,218
Vancouver, B.C.	934	1,423,344	678	619,756	1,612	2,043,100	866	1,157,065	678	612,700	1,544	1,769,765
Victoria, B.C.	829	965,465	806	1,010,419	1,635	1,975,884	804	1,225,173	769	1,007,120	1,573	2,232,293
Westport, N.S.	11	540			11	540	8	173			8	173
Weymouth, N.S.	17	1,818	12	1,927	29	3,745	25	3,356	16	4,426	41	7,782
White Rock, B.C.	69	1,316	71	1,239	140	2,555	78	1,704	72	1,253	150	2,957
Windsor, N.S.	72	78,044	43	36,040	115	114,084	97	94,947	48	37,011	145	131,958
Wolfville, N.S.	6	665	3	553	9	1,218						
Yarmouth, N.S.	250	149,984	130	10,900	380	160,884	254	155,544	123	12,145	377	167,689
York Factory, Man.	1	1,004			1	1,004	1	1,004			1	1,004
Total	9,737	10,446,235	9,429	4,343,546	19,166	14,789,781	9,891	10,042,086	9,071	4,435,297	18,962	14,477,293

No. 9.—Statement of Nationalities of Sea-going Vessels entered and cleared in the Dominion of Canada during the Twelve Months ended March 31, 1917.

ABSTRACT BY NATIONALITIES.

Arrived.			Departed.		
Under the Flag of	No.	Tons.	Under the Flag of	No.	Tons.
United Kingdom	9,737	10,446,235	United Kingdom	9,891	10,042,086
Belgium	18	37,137	Belgium	26	46,690
Brazil	2	466	Brazil	2	466
Chili	1	1,179	Chili	1	1,179
Cuba	1	1,151	Cuba	1	1,151
Denmark	251	158,789	Denmark	251	163,132
France	59	23,756	France	80	39,936
Holland	33	87,827	Holland	20	44,142
Italy	24	80,018	Italy	41	146,110
Japan	182	652,089	Japan	193	679,301
Norway	449	829,132	Norway	490	894,662
Peru	1	650	Nicaragua	4	2,069
Russia	47	44,230	Peru	1	650
Spain	1	2,289	Portugal	1	167
Sweden	22	36,083	Russia	47	43,533
United States	8,337	2,387,002	Spain	2	4,271
Uruguay	1	1,748	Sweden	20	19,103
			United States	7,887	2,343,820
			Uruguay	4	4,825
Total	19,166	14,789,781	Total	18,962	14,477,293

DESCRIPTION OF VESSELS.

—	Arrived.						—	Departed.					
	Steamers.		Sailing Vessels.		Total.			Steamers.		Sailing Vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.		No.	Tons.	No.	Tons.	No.	Tons.
British	6,765	10,077,172	2,972	369,063	9,737	10,446,235	British	6,629	9,659,716	3,262	382,370	9,891	10,042,086
Foreign	6,807	3,796,077	2,622	547,469	9,429	4,343,546	Foreign	6,421	3,884,979	2,650	550,228	9,071	4,435,207
Total	13,572	13,873,249	5,594	916,532	19,166	14,789,781	Total	13,050	13,544,695	5,912	932,598	18,962	14,477,293

No. 10.—Summary Statement of Sea-going Vessels entered Inwards and Outwards in the Dominion of Canada during the Fiscal Year ended March 31, 1917.

Nationalities.	Sea-Going Vessels, Inwards.					Sea-Going Vessels, Outwards.					Total Sea-Going Vessels, Inwards and Outwards.				
	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.	Number of Vessels.	Tons Register.	Quantity of Freight.		Crew Number.
			Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.				Tons Weight.	Tons Measurement.	
British	3,742	8,311,131	1,375,673	313,758	230,193	3,645	7,833,742	5,472,537	1,362,240	207,038	7,387	16,144,873	6,848,210	1,675,998	437,231
Canadian	5,995	2,135,104	425,116	38,044	97,513	6,246	2,208,344	899,113	109,215	101,071	12,241	4,343,448	1,324,229	147,259	198,584
Foreign	9,429	4,343,546	1,763,929	117,497	144,234	9,071	4,435,207	2,070,825	611,406	147,909	18,500	8,778,753	3,834,754	728,903	292,143
Total	19,166	14,789,781	3,564,718	469,299	471,940	18,962	14,477,293	8,442,475	2,082,861	456,018	38,128	29,267,074	12,007,193	2,552,160	927,958

No. 11.—Summary Statement of Vessels arrived and departed (exclusive of Coasting Vessels) during the Fiscal Year ended March 31, 1917.

Nationalities.	Sea-going Vessels, Inwards and Outwards.			Vessels of the Inland Waters between Canada and the United States.			Total Shipping (Exclusive of Coasting Vessels) Inwards and Outwards.		
	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.
British	7,387	16,144,873	437,231				7,387	16,144,873	437,231
Canadian	12,241	4,343,448	198,584	27,737	15,946,804	499,253	39,978	20,290,252	697,837
Foreign	18,500	8,778,753	292,143	56,350	20,498,666	564,939	74,850	29,277,419	857,082
Total	38,128	29,267,074	927,958	84,087	36,445,470	1,064,192	122,215	65,712,544	1,992,150

No.—12.—STATEMENT of the Number and Tonnage of Steam and Sailing Vessels Canada from Foreign Countries, distinguishing the Nationality of the March 31,

Ports and Outports and Countries whence arrived.	NATIONALITY									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Albert, N.B.—										
United States.....Sail....	4	531	....	.....	....	.....	....	.....	....	.....
Alberton, P.E.I.—										
Sea Fisheries.....Sail....	2	32	....	.....	....	.....	....	.....	....	.....
Alert Bay, B.C.—										
United States.....Steam.	3	355	34	5,456	....	.....	....	.....	....	.....
Sea Fisheries..... "	....	.....	2	150	....	.....	....	.....	....	.....
Total.....	3	355	36	5,606	....	.....	....	.....	....	.....
Amherst, N.S.—										
Great Britain.....Sail....	.....	.....	1	84	....	.....	....	.....	....	.....
United States..... " ...	2	418	....	.....	....	.....	....	.....	....	.....
Total.....	2	418	1	84	....	.....	....	.....	....	.....
Annapolis Royal, N.S.—										
United States.....Sail...	5	846	2	18	....	.....	....	.....	....	.....
Anyox, B.C.—										
United States.....Steam.	53	22,591	114	88,456	....	.....	....	.....	....	.....
Arichat, N.S.—										
Great Britain.....Sail....	.....	.....	1	199	....	.....	....	.....	....	.....
British W. Indies..... " ...	1	80	....	.....	....	.....	....	.....	....	.....
United States.....Steam.	1	792	....	.....	....	.....	....	.....	....	.....
United States.....Sail....	4	369	5	541	....	.....	....	.....	....	.....
Sea Fisheries..... "	71	1,616	9	483	....	.....	....	.....	....	.....
Total.....	77	2,857	15	1,223	....	.....	....	.....	....	.....
Baddeck, N.S.—										
Great Britain.....Steam.	.....	.....	1	653	....	.....	....	.....	....	.....
Newfoundland ..... "	1	46	....	.....	....	.....	....	.....	....	.....
Newfoundland.....Sail....	26	1,698	....	.....	....	.....	....	.....	....	.....
United States..... " ...	2	135	8	2,409	....	.....	....	.....	....	.....
Sea Fisheries..... " ..	12	225	3	283	....	.....	....	.....	....	.....
Total.....	41	2,104	12	3,345	....	.....	....	.....	....	.....
Barrington Passage, N.S.—										
United States.....Steam.	.....	.....	40	497	....	.....	....	.....	....	.....
United States.....Sail....	2	196	....	.....	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	3	30	18	347	....	.....	....	.....	....	.....
Sea Fisheries.....Sail....	3	30	11	639	....	.....	....	.....	....	.....
Total.....	8	256	69	1,483	....	.....	....	.....	....	.....
Barton, N.S.—										
United States.....Sail....	19	2,036	1	92	....	.....	....	.....	....	.....
Bathurst, N.B.—										
Great Britain.....Steam.	2	5,128	....	.....	4	3,970	....	.....	....	.....
Great Britain.....Sail....	.....	.....	....	.....	1	1,556	....	.....	....	.....
Newfoundland.....Steam.	.....	.....	....	.....	....	.....	....	.....	....	.....
Newfoundland.....Sail....	.....	.....	1	260	....	.....	....	.....	....	.....
Cuba ..... " ...	1	147	....	.....	....	.....	....	.....	....	.....

SESSIONAL PAPER No. 11a

AND NATIONALITY OF VESSELS.

entered Inwards *from Sea* at each of the undermentioned Ports and Outports in Vessels employed in the trade with each Country, during the Fiscal Year ended 1917.

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													4	531
													2	32
													37	5,811
													2	150
													39	5,961
2	494												3	578
													2	418
2	494												5	996
													7	864
													167	111,047
													1	199
													1	80
													1	792
													9	910
													80	2,099
													92	4,080
													1	653
													1	46
													26	1,698
													10	2,544
													15	508
													53	5,449
													40	497
													2	196
													21	377
													14	669
													77	1,739
													20	2,128
													6	9,098
													1	1,556
1	1,223												1	1,223
													1	260
													1	147

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality	British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Bathurst, N.B—*Con.*											
France	Steam.	2	5,059								
France	Sail.					1	145				
Norway	"										
Spain	Steam.					1	699				
United States	Sail.										
British S. Africa	Steam.										
British S. Africa	Sail.					1	225				
Greenland and Iceland	"										
Denmark	"										
Sea Fisheries	"	15	187								
Total		20	10,521	1	260	8	6,595				
Bear River, N.S.—											
United States	Sail.	12	1,328	1	261						
Belliveau's Cove, N.S.—											
United States	Sail.	3	421								
Bridgetown, N.S.—											
United States	Sail.	3	352								
Bridgewater, N.S.—											
Great Britain	Sail.			1	741						
France	"					1	1,080				
Italy	"			1	538						
United States	Steam.			9	1,572						
United States	Sail.	10	2,105	42	17,366						
Total		10	2,105	53	20,217	1	1,080				
Buctouche, N.B.—											
Great Britain	Sail.										
Newfoundland	"										
Denmark	Steam.										
Total											
Campbellton N.B.—											
Great Britain	Steam.	4	9,458			10	9,917				
Great Briatin	Sail.										
Spain	Steam.	1	1,774								
Total		5	11,232			10	9,917				
Campo Bello, N.B.—											
United States	Steam.	117	19,183	546	12,353						
United States	Sail.			2	134						
Total		117	19,183	548	12,487						
Canning, N.S.—											
United States	Sail.	2	431								
Canso, N.S.—											
Newfoundland	Sail.	10	910	3	280						
United States	Steam.			2	121						
United States	Sail.	13	1,658	29	2,778						
Panama	Steam.	1	124								
Sea Fisheries	"	56	9,557	99	1,989						
Sea Fisheries	Sail.	48	4,299	107	6,984						
Total		128	16,548	240	12,152						

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													2	5,059
													1	145
1	178												1	178
													1	699
1	285												1	285
1	1,223												1	1,223
													1	225
3	531												3	531
1	154												1	154
													15	187
8	3,594												37	20,970
													13	1,589
													3	421
													3	352
													1	741
													1	1,080
													1	538
													9	1,572
													52	19,471
													64	23,402
1	281												1	281
1	79												1	79
2	206												2	206
4	566												4	566
3	4,641									Swedish	1	1,069	18	25,085
								1	382				1	382
													1	1,774
3	4,641							1	382		1	1,069	20	27,241
													663	31,536
													2	134
													665	31,670
													2	431
													13	1,190
													2	121
													42	4,436
													1	124
													155	11,546
													155	11,283
													368	28,700

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Caraquet, N.B.—										
United States.....Sail....	1	88								
Sea Fisheries..... " ...	157	2,249								
Total.....	158	2,337								
Charlottetown, P.E.I.—										
Great Britain.....Steam.	1	1,454								
Great Britain.....Sail....										
British W. Indies..... " ...	6	1,016	1	452						
Newfoundland.....Steam.	12	4,092								
Newfoundland.....Sail....	3	201								
St. Pierre..... " ...	3	237								
Spain..... " ...										
United States.....Steam.	21	22,944								
United States.....Sail....	7	881	8	3,828						
Sea Fisheries..... " ...	1	14								
Total.....	54	30,839	9	4,280						
Chatham, N.B.—										
Great Britain.....Steam.	7	18,383			6	5,440				
Great Britain.....Sail....	1	99			1	997				
Newfoundland..... " ...										
France.....Steam.					1	1,287				
France.....Sail....										
Portugal..... " ...										
Spain..... " ...										
United States.....Steam.			1	1,281	1	2,213				
Denmark.....Sail....										
Total.....	8	18,482	1	1,281	9	9,937				
Chemainus, B.C.—										
United States.....Steam.	6	263	45	1,618						
United States.....Sail....			6	2,000						
Total.....	6	263	51	3,618						
Chester, N.S.—										
United States.....Steam.			2	20						
United States.....Sail....	2	198								
Sea Fisheries.....Steam.	1	11								
Sea Fisheries.....Sail ...	29	342								
Total.....	32	551	2	20						
Chicoutimi, Que.—										
Great Britain.....Steam.	7	16,692			2	3,513				
France..... "	1	1,802			1	1,260				
United States..... "					1	1,379				
Total.....	8	18,494			4	6,152				
Church Point, N.S.—										
Italy.....Sail....	1	396								
United States..... " ...	5	584								
Total.....	6	980								
Clark's Harbour, N.S.—										
United States.....Steam.			41	575						
United States.....Sail....	3	205								
Sea Fisheries.....Steam.	3	69	25	394						
Total.....	6	274	66	969						

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
....	....	....	....	....	....	....	....	....	....	....	....	....	1	88
....	....	....	....	....	....	....	....	....	....	....	....	....	157	2,249
....	....	....	....	....	....	....	....	....	....	....	....	....	158	2,337
....	....	....	....	....	....	....	....	....	....	....	....	....	1	1,454
1	181	....	....	....	....	....	....	1	321	....	....	....	2	502
....	....	....	....	....	....	....	....	....	....	....	....	....	7	1,468
....	....	....	....	....	....	....	....	....	....	....	....	....	12	4,092
....	....	....	....	....	....	....	....	....	....	....	....	....	3	201
....	....	....	....	....	....	....	....	....	....	....	....	....	3	237
....	....	1	107	....	....	....	....	1	220	....	....	....	2	327
....	....	....	....	....	....	....	....	....	....	....	....	....	21	22,944
....	....	....	....	....	....	....	....	....	....	....	....	....	15	4,709
....	....	....	....	....	....	....	....	....	....	....	....	....	1	14
1	181	1	107	....	....	....	....	2	541	....	....	....	67	35,948
2	1,292	....	....	....	....	....	....	....	....	....	....	....	15	25,115
14	2,901	....	....	....	....	....	....	4	3,277	Swedish....	2	1,310	22	8,584
1	78	....	....	....	....	....	....	....	....	....	....	....	1	78
1	1,217	....	....	....	....	....	....	....	....	....	....	....	2	2,504
7	1,199	....	....	....	....	....	....	....	....	....	....	....	7	1,199
1	212	....	....	....	....	....	....	....	....	....	....	....	1	212
2	368	....	....	....	....	....	....	2	415	....	....	....	4	783
....	....	....	....	....	....	....	....	....	....	....	....	....	2	3,494
45	8,404	....	....	....	....	....	....	2	400	....	....	....	47	8,804
73	15,671	....	....	....	....	....	....	8	4,092	....	2	1,310	101	50,773
....	....	....	....	....	....	....	....	....	....	....	....	....	51	1,881
....	....	....	....	....	....	....	....	....	....	....	....	....	6	2,000
....	....	....	....	....	....	....	....	....	....	....	....	....	57	3,881
....	....	....	....	....	....	....	....	....	....	....	....	....	2	20
....	....	....	....	....	....	....	....	....	....	....	....	....	2	198
....	....	....	....	....	....	....	....	....	....	....	....	....	1	11
....	....	....	....	....	....	....	....	....	....	....	....	....	29	342
....	....	....	....	....	....	....	....	....	....	....	....	....	34	571
2	3,188	....	....	....	....	....	....	....	....	....	....	....	11	23,393
....	....	....	....	....	....	....	....	....	....	....	....	....	2	3,062
1	1,338	....	....	....	....	....	....	....	....	....	....	....	2	2,717
3	4,526	....	....	....	....	....	....	....	....	....	....	....	15	29,172
....	....	....	....	....	....	....	....	....	....	....	....	....	1	396
....	....	....	....	....	....	....	....	....	....	....	....	....	5	584
....	....	....	....	....	....	....	....	....	....	....	....	....	6	980
....	....	....	....	....	....	....	....	....	....	....	....	....	41	575
....	....	....	....	....	....	....	....	....	....	....	....	....	3	205
....	....	....	....	....	....	....	....	....	....	....	....	....	28	463
....	....	....	....	....	....	....	....	....	....	....	....	....	72	1,243

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Clementsport, N.S.—											
United States	Sail	10	1,337								
Dalhousie, N.B.											
Great Britain	Steam									1	1,219
Great Britain	Sail					3	3,874				
France	Steam					1	1,528				
France	Sail					3	4,285				
Portugal	"										
Denmark	"					1	1,043				
Total						8	10,730			1	1,219
Digby, N.S.—											
United States	Steam	1	20	11	1,095						
United States	Sail	12	3,700	4	88						
Total		13	3,720	15	1,183						
Dorchester, N.B.—											
United States	Sail	2	268								
Fredericton, N.B.—											
United States	Sail	3	952	12	2,574						
Freeport, N.S.—											
United States	Sail	2	186								
Gaspé, Que.—											
Great Britain	Steam					5	5,945				
Great Britain	Sail					1	2,547				
British W. Indies	"	2	296								
Spain	Steam										
Spain	Sail										
United States	"	4	459	2	286						
Total		6	755	2	286	6	8,492				
Georgetown, P.E.I.—											
Newfoundland	Sail	5	239								
United States	"	1	197								
Total		6	436								
Glace Bay, N.S.—											
Great Britain	Steam	9	861								
Great Britain	Sail	140	6,834								
United States	"			4	62						
Total		149	7,695	4	62						
Halifax, N.S.—											
Great Britain	Steam	239	863,196	3	6,960	8	13,809			1	1,219
Great Britain	Sail	3	889	1	358	10	11,821				
British W. Indies	Steam	29	79,753	2	1,553	14	9,504				
British W. Indies	Sail	34	5,481			1	577				
Newfoundland	Steam	63	71,314	1	318	1	969			1	3,663
Newfoundland	Sail	65	5,287	1	74						
France	Steam	9	24,173	2	5,404	1	2,177				
France	Sail					2	3,350				
San Domingo	Steam			2	1,896	3	2,711				
Holland	"										
Italy	"	1	2,185	1	5,514						
Norway	"	1	3,007								

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													10	1,337
2	2,377												3	3,596
3	554							4	6,279				10	10,707
													1	1,528
4	728	1	370					2	1,702				10	7,085
								1	191				1	191
11	2,065												12	3,108
20	5,724	1	370					7	8,172				37	26,215
													12	1,115
													16	3,788
													28	4,903
													2	268
													15	3,526
													2	186
						1	1,999						6	7,944
													1	2,547
													2	296
1	760												1	760
4	810							4	1,057				8	1,867
													6	745
5	1,570					1	1,999	4	1,057				24	14,159
													5	239
													1	197
													6	436
													9	861
													140	6,834
													4	62
													153	7,757
										Swedish	1	2,710	253	889,642
										Uruguayan	1	1,748		
1	218							1	765	Swedish	3	1,101	19	15,152
1	161												46	90,971
		2	432										35	6,058
													68	76,696
1	82												67	5,443
		1	1,116										13	32,870
2	390							2	482				6	4,222
										Cuban	1	1,151	6	5,758
										Dutch	1	2,266	1	2,266
						1	1,999						3	9,698
													1	3,007

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Halifax, N.S.—*Con.*											
Norway	Sail.					4	3,771				
Denmark	Steam.					1	2,547				
Denmark	Sail.										
Portugal	Steam.	1	1,820								
Portugal	Sail.										
Russia	Steam.										
Saint Pierre	"	3	252								
Saint Pierre	Sail.	2	198								
Spain	Steam.	3	7,543								
Spain	Sail.	1	170			4	2,548				
United States	Steam.	206	717,273	39	43,648	68	152,695			9	19,762
United States	Sail.	65	10,231	69	25,955	4	5,522				
Chili	Steam.	2	8,075								
Gibraltar	"	6	18,950	1	1,799	1	1,707				
Gibraltar	Sail.										
Mexico	Steam.	5	10,109	1	3,032						
Sea	"	5	11,007	6	1,410	2	2,515				
Sea	Sail.	2	497								
Sea Fisheries	Steam.	5	687	1	167						
Sea Fisheries	Sail.	118	7,511	41	2,342						
Total		868	1,849,608	171	100,430	124	216,223			11	24,644
Hantsport, N.S.—											
United States	Steam.			11	3,339						
United States	Sail.	3	1,049	5	1,397						
Total		3	1,049	16	4,736						
Hillsboro, N.B.—											
United States	Sail.	5	4,612	8	3,352						
Indian Island, N.B.—											
United States	Steam.	5	8	100	1,118						
Isaacs Harbour, N.S.—											
United States	Sail.	2	180	3	261						
Sea Fisheries	team.	1	10	11	294						
Sea Fisheries	Sail.			1	99						
Total		3	190	15	654						
Joggins Mines, N.S.—											
United States	Sail.	2	255	5	1,064						
Kentville, N.S.—											
United States	Sail.	2	257								
Kingsport, N.S.—											
United States	Steam.	3	2,231								
United States	Sail.	1	96	1	145						
Total		4	2,327	1	145						
Ladner, B.C.—											
United States	Steam.	3	136								

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													4	3,771
													1	2,547
2	330							1	628				3	958
													1	1,820
1	195												1	195
								1	4,119				1	4,119
		13	2,808										16	3,060
		2	493										4	691
1	794									Spanish	1	2,289	6	11,693
										Swedish	1	1,067		
													5	2,718
19	40,024					1	2,726	5	13,137	Swedish	9	22,757	383	1,089,429
										Dutch	27	77,407		
										Dutch	2	3,580	140	45,288
													2	8,075
													8	22,456
								1	288				1	288
													6	13,141
		3	3,348										16	18,280
													2	497
													6	854
													159	9,853
28	42,194	21	8,197			2	4,725	11	19,419		47	116,076	1,283	2,381,516
													11	3,339
													8	2,446
													19	5,785
													13	7,964
													105	1,126
													5	441
													12	304
													1	99
													18	844
													7	1,319
													2	257
													3	2,231
													2	241
													5	2,472
													3	136

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports—and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Ladysmith, B.C.—											
United States	Steam.	64	8,507	82	36,196						
United States	Sail.	37	7,069	77	23,009						
Total		101	15,576	159	59,205						
La Have, N.S.—											
British W. Indies	Sail.	12	1,467								
Newfoundland	"	5	466								
Portugal	"	1	99								
Spain	"	1	99								
United States	"	20	3,475	2	360						
Sea Fisheries	Steam.	2	30	14	924						
Sea Fisheries	Sail.	59	4,655	2	161						
Total		100	10,291	18	1,445						
Levis, Que.—											
Great Britain	Steam.	1	3,046								
Liverpool, N.S.—											
Great Britain	Steam.					1	2,200				
Great Britain	Sail.	1	374	2	578						
Newfoundland	Steam.	1	59								
Newfoundland	Sail.			1	91						
United States	Steam.			40	1,539						
United States	Sail.	11	1,623	43	5,890						
Sea Fisheries	Steam.			56	2,662						
Sea Fisheries	Sail.			40	3,164						
Total		13	2,056	182	13,924	1	2,200				
Lockeport, N.S.—											
Newfoundland	Sail.	1	91								
United States	"	3	394	12	255						
Sea Fisheries	"	43	1,588	29	1,987						
Total		47	2,073	41	2,242						
Lord's Cove, N.B.—											
United States	Steam.	334	4,880	122	1,753						
Louisburg, N.S.—											
Great Britain	Steam.	10	26,912			9	11,330				
British W. Indies	"	1	2,265								
Newfoundland	"	90	60,016	1	813						
Newfoundland	Sail.	32	2,512	3	300						
Brazil	Steam.										
Cuba	"	1	3,043								
France	"	1	3,490			2	2,753				
Sea Cable & Admiralty	"	3	3,310	3	705						
Holland	"										
Italy	"										
Portugal	"	1	2,274								
Saint Pierre	Sail.	8	607								
Spain	Steam.					2	2,160				
United States	"	104	177,924	3	9,184	51	88,215			1	1,848
United States	Sail.	10	4,848	13	1,172						
Gibraltar	Steam.	3	8,213								
French Africa	"	4	11,103			4	5,192				
Sea Fisheries	Sail.	4	304	156	6,380						
Total		272	306,821	179	18,554	68	109,650			1	1,848

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessles.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													146	44,703
													114	30,078
													260	74,781
													12	1,467
													5	466
													1	99
													1	99
													22	3,835
													16	954
													61	4,816
													118	11,736
													1	3,046
													1	2,200
													3	952
													1	59
													1	91
													40	1,539
													54	7,513
													56	2,662
													40	3,164
													196	18,180
													1	91
													15	649
													72	3,575
													88	4,315
													456	6,633
4	4,916												23	43,158
													1	2,265
													91	60,829
													35	2,812
1	2,397												1	2,397
													1	3,043
													3	6,243
													6	4,015
										Dutch	1	1,671	1	1,671
1	1,175												1	1,175
													1	2,274
													8	607
1	2,195												3	4,319
										Spanish	1	1,982		
13	17,712									Dutch	2	2,903	175	299,768
													23	6,020
2	2,366												5	10,579
													8	16,295
													160	6,684
22	30,725										4	6,556	546	474,154

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Lower East Pubnico, N.S.—											
United States	Steam.	1	67								
United States	Sail.	4	221	22	1,062						
Sea Fisheries	"	25	1,334	17	1,097						
Total		30	1,622	39	2,159						
Lunenburg, N.S.—											
British W. Indies	Sail.	38	4,330								
Newfoundland	"	6	618	1	155						
Portugal	"	13	1,268								
Spain	"	3	297								
United States	"	26	3,442	2	443						
Sea Fisheries	Steam.	27	444	26	1,793						
Sea Fisheries	Sail.	206	17,489	3	309						
Total		319	27,888	32	2,700						
Magdalen Islands, Que.—											
Newfoundland	Sail.	21	1,608	1	75						
Portugal	"										
United States	"	6	453	5	331						
Total		27	2,061	6	406						
Mahone Bay, N.S.—											
British W. Indies	Sail.	2	188								
Newfoundland	"	2	184								
United States	"	3	277								
Sea Fisheries	"	12	1,101								
Total		19	1,750								
Maitland, N.S.—											
United States	Sail.	2	198								
Meteghan River, N.S.—											
United States	Sail.	5	659								
Moncton, N.B.—											
Great Britain	Steam.	5	11,902								
British W. Indies	Sail.	1	199								
Norway	Steam.					1	2,200				
United States	Sail.	2	377	5	958						
Total		8	12,478	5	958	1	2,200				
Montague Bridge, P.E.I.—											
Newfoundland	Sail.	1	35								
United States	"	1	99								
Total		2	134								
Montreal, Que.—											
Great Britain	Steam.	360	1,364,102	1	2,246	2	3,156			1	4,729
British W. Indies	"	3	5,655								
Newfoundland	"	1	1,541								
Newfoundland	Sail.	1	147								
Greece	Steam.	5	17,751								
Gibraltar	"	13	37,349			1	1,411				
Egypt	"	5	23,501								
France	"	90	281,135			3	6,405				
Malta	"	1	2,475								
British S. Africa	"	2	4,612								

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	67
													26	1,283
													42	2,431
													69	3,781
													38	4,330
													7	773
													13	1,268
													3	297
													28	3,885
													53	2,237
													209	17,798
													351	30,588
													22	1,683
		3	519										3	519
													11	784
		3	519										36	2,986
													2	188
													2	184
													3	277
													12	1,101
													19	1,750
													2	198
													5	659
													5	11,902
													1	199
													1	2,200
													7	1,335
													14	15,636
													1	35
													1	99
													2	134
1	1,145	1	4,537										366	1,379,915
													3	5,655
													1	1,541
													1	147
													5	17,751
													14	38,760
													5	23,501
													93	287,540
													1	2,475
													2	4,612

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality	British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Montreal, Que.—*Con.*											
Italy	Steam.	16	43,770								
Portugal	"	4	10,079								
French Africa	"	2	9,189								
Spain	"	1	1,940								
United States	"	6	16,378	1	241	1	2,418				
Mexico	"			1	3,049						
Total		510	1,819,624	3	5,536	7	13,390			1	4,729
Moose Factory, Man.—											
Great Britain	Steam.	1	1,541								
Murray Harbour, P.E.I.—											
Sea Fisheries	Sail.	4	113								
Nanaimo, B.C.—											
United States	Steam.	107	17,085	332	89,443	19	50,879				
United States	Sail.	29	4,741	289	102,634						
Japan	"	1	3,149								
Mexico	"	1	3,674								
Sea Fisheries	Steam.			3	45						
Total		138	28,649	624	192,122	19	50,879				
New Campbellton, N.S.—											
Newfoundland	Sail.	2	88								
United States	Steam.			1	1,472						
Total		2	88	1	1,472						
Newcastle, N.B.—											
Great Britain	Steam.	1	2,263			2	2,062			1	1,136
Great Britain	Sail.										
France	"										
Italy	Steam.									1	969
Portugal	"					1	745				
United States	"					1	2,473			1	1,477
Greenland and Iceland	Sail.										
Total		1	2,263			4	5,280			3	3,582
Newport, B.C.—											
United States	Steam.	89	27,184	62	15,878						
New Westminster, B.C.—											
United States	Steam.	11	3,471	22	4,183						
United States	Sail.			4	1,289						
Total		11	3,471	26	5,472						
North East Harbour, N.S.—											
United States	Sail.			2	141						
Sea Fisheries	"	3	82	2	109						
Total		3	82	4	250						
North Head, N.B.—											
United States	Steam.	189	23,773	26	370						
United States	Sail.			2	120						
Total		189	23,773	28	490						

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
1	2,294					11	46,995						28	93,059
													4	10,079
													2	9,189
													1	1,940
													8	19,037
													1	3,049
2	3,439	1	4,537			11	46,995						535	1,898,250
													1	1,541
													4	113
										Japanese	9	21,848	467	179,255
													318	107,375
										Japanese	1	2,251	2	5,400
													1	3,674
													3	45
											10	24,099	791	295,749
													2	88
													1	1,472
													3	1,560
													4	5,461
2	406							2	520	Brazilian	1	235	5	1,161
2	315												2	315
													1	969
													1	745
													2	3,950
13	2,295												13	2,295
17	3,016							2	520		1	235	28	14,896
													151	43,062
													33	7,654
													4	1,289
													37	8,943
													2	141
													5	191
													7	332
													215	24,143
													2	120
													217	24,263

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
North Sydney, N.S.—										
Great Britain.....Steam.	2	2,605			6	8,682				
Great Britain.....Sail...	2	415	1	599	6	5,616				
British W. Indies..... " ...	1	198								
Newfoundland.....Steam.	397	206,209	1	235	13	26,387				
Newfoundland.....Sail...	463	29,696	1	95						
France.....Steam.					1	1,547				
Italy..... "	2	4,579			1	1,411				
Norway..... "					1	646				
Portugal.....Steam					1	1,379				
Portugal..... ... Sail...										
Saint Pierre.....Steam.										
Saint Pierre.....Sail...	17	1,260								
United States.....Steam					2	1,580				
United States.....Sail...	9	779	2	188						
Greenland and Iceland " ...										
Sea Fisheries..... " ...	34	2,288	27	2,788						
Total.....	927	248,029	32	3,905	31	47,248				
Ocean Falls, B.C.—										
United States..... Steam.	4	3,345	6	5,185						
United States.....Sail...	3	787	2	472						
Total.....	7	4,132	8	5,657						
Parrsboro, N.S.—										
Great Britain.....Steam.	2	6,002			1	2,340				
Great Britain.....Sail...	6	1,959	1	360	1	1,615				
Cuba..... " ...	1	475								
France..... " ...	1	271								
United States.....Steam.			33	7,828	2	2,470				
United States.....Sail....	23	9,964	23	4,527						
Total.....	33	18,671	57	12,715	4	6,425				
Paspebiac, Que.—										
Great Britain.....Steam.	2	5,314			4	4,354				
Great Britain.....Sail....					4	2,731				
France..... "										
Norway..... "					1	548				
Portugal..... "										
Spain..... "					2	661				
United States.....Steam.	1	3,038								
United States.....Sail....			1	282						
Denmark..... "										
Gibraltar..... "	1	187								
Greenland and Iceland "										
Total.....	4	8,539	1	282	11	8,294				
Percé, Que.—										
Newfoundland.....Sail....	2	124								
United States..... "			1	58						
Total.....	2	124	1	58						
Pictou, N.S.—										
Great Britain.....Sail....					2	2,358				
France.....Steam.	1	2,753								
Italy..... "									1	1,115
United States..... "	1	2,753			1	1,898				

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessles.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
5	900	....	....	....	....	....	....	....	....	....	....	....	13	12,187
....	....	....	....	....	....	....	....	....	....	....	....	....	9	6,630
....	....	....	....	....	....	....	....	....	....	....	....	....	1	198
1	176	....	....	....	....	....	....	....	....	....	....	....	412	233,007
....	....	....	....	....	....	....	....	....	....	....	....	....	464	29,791
1	297	....	....	....	....	....	....	....	....	....	....	....	2	1,844
....	....	....	....	....	....	....	....	....	....	....	....	....	3	5,990
1	989	....	....	....	....	....	....	....	....	....	....	....	2	1,635
....	....	....	....	....	....	....	....	....	....	....	....	....	1	1,379
....	....	1	134	....	....	....	....	....	....	....	....	....	1	134
....	....	25	5,400	....	....	....	....	....	....	....	....	....	25	5,400
....	....	....	....	....	....	....	....	....	....	....	....	....	17	1,260
....	....	....	....	....	....	....	....	....	....	....	....	....	2	1,580
....	....	....	....	....	....	....	....	....	....	....	....	....	11	967
2	440	....	....	....	....	....	....	....	....	....	....	....	2	440
1	81	1	58	....	....	....	....	....	....	....	....	....	63	5,215
11	2,883	27	5,592	....	....	....	....	....	....	....	....	....	1,028	307,657
....	....	....	....	....	....	....	....	....	....	....	....	....	10	8,530
....	....	....	....	....	....	....	....	....	....	....	....	....	5	1,259
....	....	....	....	....	....	....	....	....	....	....	....	....	15	9,789
....	....	....	....	....	....	....	....	....	....	....	....	....	3	8,342
....	....	....	....	....	....	....	....	....	....	....	....	....	8	3,934
....	....	....	....	....	....	....	....	....	....	....	....	....	1	475
....	....	....	....	....	....	....	....	....	....	....	....	....	1	271
....	....	....	....	....	....	....	....	....	....	....	....	....	35	10,298
1	367	....	....	....	....	....	....	....	....	....	....	....	47	14,858
1	367	....	....	....	....	....	....	....	....	....	....	....	95	38,178
....	....	....	....	....	....	....	....	....	....	....	....	....	6	9,668
5	921	....	....	....	....	....	....	....	....	Brazilian....	1	231	10	3,883
1	157	....	....	....	....	....	....	2	597	....	....	....	3	754
....	....	....	....	....	....	....	....	....	....	....	....	....	1	548
1	168	....	....	....	....	....	....	....	....	....	....	....	1	168
2	248	....	....	....	....	....	....	3	710	....	....	....	7	1,619
....	....	....	....	....	....	....	....	....	....	....	....	....	1	3,038
....	....	....	....	....	....	....	....	....	....	....	....	....	1	282
....	1,202	....	....	....	....	....	....	....	....	....	....	....	1	202
....	....	....	....	....	....	....	....	....	....	....	....	....	1	187
2	327	....	....	....	....	....	....	....	....	....	....	....	2	327
12	2,023	....	....	....	....	....	....	5	1,307	....	1	231	34	20,676
....	....	....	....	....	....	....	....	....	....	....	....	....	2	124
....	....	....	....	....	....	....	....	....	....	....	....	....	1	58
....	....	....	....	....	....	....	....	....	....	....	....	....	3	182
....	....	....	....	....	....	....	....	....	....	....	....	....	2	2,358
....	....	....	....	....	....	....	....	....	....	....	....	....	1	2,753
....	....	....	....	....	....	....	....	....	....	....	....	....	1	1,115
....	....	....	....	....	....	....	....	....	....	....	....	....	2	4,651

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality	British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Pictou, N.S.—*Con.*											
United States	Sail...	3	280								
Greenland and Iceland	"										
Total		5	5,786			3	4,256			1	1,115
Port Alberni, B.C.—											
United States	Steam.	1	280	6	2,610						
United States	Sail....	2	798								
Total		3	1,078	6	2,610						
Port Clyde, N.S.—											
United States	Sail....	1	99	1	253						
Sea Fisheries	"	1	15								
Total		2	114	1	253						
Port Elgin, N.B.—											
Russia	Sail....										
Port Hawkesbury, N.S.—											
Great Britain	Sail....			1	199						
British W. Indies	"	10	1,442								
Newfoundland	"	5	388								
Saint Pierre	"	1	71								
United States	Steam.	18	19,404	2	409						
United States	Sail....	5	562	24	1,828						
Sea Fisheries	Steam.	1	124								
Sea Fisheries	Sail....	11	1,016	20	1,914						
Total		51	23,007	47	4,350						
Port Hood, N.S.—											
Sea Fisheries	Sail....			3	282						
Port La Tour, N.S.—											
Sea Fisheries	Steam.	3	34								
Sea Fisheries	Sail...			3	200						
Total		3	34	3	200						
Port Mulgrave, N.S.—											
Great Britain	Steam.	1	2,094								
United States	"			10	2,672						
United States	Sail....	2	181	1	54						
Nicaragua	Steam.			2	1,671						
Sea Fisheries	Sail....	6	577	3	289						
Total		9	2,852	16	4,686						
Port Simpson, B.C.—											
United States	Steam.	4	499	9	246						
Port Wade, N.S.—											
United States	Sail....	6	588								
Port Williams, N.S.—											
United States	Sail....	3	592	1	173						
Powell River, B.C.—											
Australia	Steam.	15	41,578								
Japan	"										
United States	"	5	356	100	47,308						
Total		20	41,934	100	47,308						

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessles.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
....	....	....	....	....	....	....	....	....	....	....	....	....	3	280
....	....	....	....	....	....	....	....	....	....	Swedish....	1	417	1	417
....	....	....	....	....	....	....	....	....	....	....	1	417	10	11,574
....	....	....	....	....	....	....	....	....	....	....	....	....	7	2,890
....	....	....	....	....	....	....	....	....	....	....	....	....	2	798
....	....	....	....	....	....	....	....	....	....	....	....	....	9	3,688
....	....	....	....	....	....	....	....	....	....	....	....	....	2	352
....	....	....	....	....	....	....	....	....	....	....	....	....	1	15
....	....	....	....	....	....	....	....	....	....	....	....	....	3	367
....	....	....	....	....	....	....	....	1	399	....	....	....	1	399
....	....	....	....	....	....	....	....	....	....	....	....	....	1	199
....	....	....	....	....	....	....	....	....	....	....	....	....	10	1,442
....	....	....	....	....	....	....	....	....	....	....	....	....	5	388
....	....	....	....	....	....	....	....	....	....	....	....	....	1	71
....	....	....	....	....	....	....	....	....	....	....	....	....	20	19,813
....	....	....	....	....	....	....	....	....	....	....	....	....	29	2,390
....	....	....	....	....	....	....	....	....	....	....	....	....	1	124
....	....	....	....	....	....	....	....	....	....	....	....	....	31	2,930
....	....	....	....	....	....	....	....	....	....	....	....	....	98	27,357
....	....	....	....	....	....	....	....	....	....	....	....	....	3	282
....	....	....	....	....	....	....	....	....	....	....	....	....	3	34
....	....	....	....	....	....	....	....	....	....	....	....	....	3	200
....	....	....	....	....	....	....	....	....	....	....	....	....	6	234
....	....	....	....	....	....	....	....	....	....	....	....	....	1	2,094
....	....	....	....	....	....	....	....	....	....	....	....	....	10	2,672
....	....	....	....	....	....	....	....	....	....	....	....	....	3	235
....	....	....	....	....	....	....	....	....	....	....	....	....	2	1,671
....	....	....	....	....	....	....	....	....	....	....	....	....	9	866
....	....	....	....	....	....	....	....	....	....	....	....	....	25	7,538
....	....	....	....	....	....	....	....	....	....	....	....	....	13	745
....	....	....	....	....	....	....	....	....	....	....	....	....	6	588
....	....	....	....	....	....	....	....	....	....	....	....	....	4	765
....	....	....	....	....	....	....	....	....	....	....	....	....	15	41,578
....	....	....	....	....	....	....	....	....	....	Japanese....	1	2,370	1	2,370
....	....	....	....	....	....	....	....	....	....	....	....	....	105	47,664
....	....	....	....	....	....	....	....	....	....	....	1	2,370	121	91,612

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Prince Rupert, B.C.—											
United States	Steam.	189	242,585	136	132,099						
United States	Sail										
Sea Fisheries	Steam.	438	11,356	747	129,996						
Total		627	253,941	883	262,095						
Pugwash, N.S.—											
Great Britain	Sail					1	1,347				
Holland	Steam.					1	1,528				
Norway	Sail					1	1,136				
Spain	Sail					1	511				
Total						4	4,522				
Quebec, Que.—											
Great Britain	Steam.	111	559,665			6	8,217				
Newfoundland	"	25	5,221								
Newfoundland	Sail	13	886								
France	Steam.	1	2,127								
Italy	"										
Saint Pierre	"	2	2,562								
Total		152	570,461			6	8,217				
Richibucto, N.B.—											
Great Britain	Sail										
Portugal	"										
Denmark	"										
Total											
Rimouski, Que.—											
Great Britain	Steam.	37	203,189			1	1,117				
Great Britain	Sail					5	5,517				
Total		37	203,189			6	6,634				
River Hebert, N.S.—											
United States	Sail	1	77								
St. Andrews, N.B.—											
United States	Steam.	282	17,711	1,086	48,269						
United States	Sail	4	259	13	1,603						
Total		286	17,970	1,099	49,872						
St. George, N.B.—											
United States	Steam.			61	2,201						
United States	Sail	10	120	43	4,824						
Total		10	120	104	7,025						
St. John, N.B.—											
Great Britain	Steam.	191	800,097			3	2,627				
Great Britain	Sail	2	2,888			4	4,267				
British W. Indies	Steam.	27	74,563								
British W. Indies	Sail	11	2,402	1	432						
Newfoundland	Sail	1	71								
San Domingo	Steam.			2	1,896	7	5,608				
Cuba	Sail	1	393								
France	Steam.	2	7,055								
France	Sail	1	132			2	2,834				
Canary Islands	Steam.					1	689				

SESSIONAL PAPER No. 11a

and Sailing Vessles entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	325	374,684
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Japanese....	1	204	1	204
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,185	141,352
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	204	1,511	516,240
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,347
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,528
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,136
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	511
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4,522
5	5,901	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	122	573,783
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	5,221
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	886
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2,127
.....	.....	.....	.....	.....	.....	1	1,864	.....	.....	.....	.....	.....	1	1,864
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2,562
5	5,901	.....	.....	.....	.....	1	1,864	.....	.....	.....	.....	.....	164	586,443
3	549	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	549
1	195	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	195
4	444	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	444
8	1,188	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	1,188
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Swedish....	1	1,059	39	205,365
1	279	.....	.....	.....	.....	.....	.....	.....	.....	Swedish....	2	2,611	8	8,407
1	279	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3,670	47	213,772
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	77
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,368	65,980
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	1,862
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,385	67,842
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61	2,201
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53	4,944
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	114	7,145
3	2,730	3	2,866	.....	.....	.....	.....	.....	.....	.....	.....	.....	200	808,320
2	1,114	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	8,269
.....	.....	.....	.....	.....	.....	1	1,680	.....	.....	.....	.....	.....	28	76,243
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	2,834
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	71
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	7,504
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	393
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	7,055
.....	.....	1	452	.....	.....	.....	.....	1	265	.....	.....	.....	5	3,683
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	689

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
St. John, N.B.—*Con.*											
Canary Islands	Sail....	1	384								
Italy	Steam.										
Portugal	Sail....										
Greenland & Iceland	"										
Spain	Steam.	1	2,534								
Spain	Sail....										
United States	Steam.	21	33,961	125	279,837						
United States	Sail....	143	22,766	457	32,804						
Gibraltar	Steam.	8	22,640								
French Africa	" .	1	4,483								
Sea Fisheries	Sail....	36	703								
Total		447	975,072	585	314,969	17	16,025				
Saint Martins, N.B.—											
United States	Steam.			15	1,185						
United States	Sail....	21	7,755	8	2,263						
Total		21	7,755	23	3,448						
St. Stephen, N.B.—											
United States	Steam.	28	2,215	90	1,647						
United States	Sail....	2	64	24	5,066						
Total		30	2,279	114	6,713						
Saekville, N.B.—											
United States	Sail....	3	529	1	241						
Salmon River, N.S.—											
British W. Indies	Sail....	1	219								
United States	"	2	139	4	59						
Sea Fisheries	"	3	41								
Total		6	399	4	59						
Sandy Point, N.S.—											
Great Britain	Sail....			1	84						
British W. Indies	"	2	258								
Newfoundland	Steam.	1	1,178								
Newfoundland	Sail....	4	362	7	631						
United States	"	3	394	85	7,736						
Sea Fisheries	Steam.			1	77						
Sea Fisheries	Sail....			57	4,864						
Total		10	2,192	151	13,392						
Sheet Harbour, N.S.—											
Great Britain	Steam.					1	196				
Shelburne, N.S.—											
Great Britain	Sail....			1	84						
British W. Indies	"	1	94								
Newfoundland	"	1	89								
France	Steam.										
United States	" .			1	24						
United States	Sail....	9	960	22	2,066						
Sea Fisheries	"	13	394	19	1,593						
Total		24	1,537	43	3,767						

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	384
						1	3,399						1	3,399
1	192												1	192
6	939												6	939
1	1,175												2	3,709
								1	664				1	664
						4	10,221						150	324,019
1	225												601	55,795
						3	9,135						11	31,775
													1	4,483
													36	703
14	6,375	4	3,318			9	24,435	2	929				1,078	1,341,123
													15	1,185
													29	10,018
													44	11,203
													118	3,862
													26	5,130
													144	8,992
													4	770
													1	219
													6	198
													3	41
													10	458
													1	84
													2	258
													1	1,178
													11	993
													88	8,130
													1	77
													57	4,864
													161	15,584
													1	196
													1	84
													1	94
													1	89
		1	1,116										1	1,116
													1	24
													31	3,026
													32	1,987
		1	1,116										68	6,420

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Sherbrooke, N.S.—										
Great Britain.....Sail...										
France..... " ...										
United States..... " ...	1	357								
Total.....	1	357								
Shippegan, N.B.—										
Spain.....Sail...										
Sea Fisheries.....Steam.	12	133								
Sea Fisheries.....Sail...	72	1,052	1	92						
Total.....	84	1,185	1	92						
Shusharti Bay, B.C.—										
United States.....Steam.			4	1,572						
Sea Fisheries..... " .			3	65						
Total.....			7	1,637						
Sidney, B.C.—										
United States.....Steam.	40	2,843	49	1,408						
United States.....Sail...	1	141	4	1,897						
Total.....	41	2,984	53	3,305						
Sorel, Que.—										
Great Britain.....Steam.	1	2,725								
Souris, P.E.I.—										
Newfoundland.....Sail...	1	94								
Saint Pierre..... " ...	1	71								
United States..... " ...	1	99								
Sea Fisheries..... " ...	23	1,166	11	865						
Total.....	26	1,430	11	865						
Steveston, B.C.—										
United States.....Steam.	52	2,065	137	4,541						
United States.....Sail...			15	326						
Sea Fisheries.....Steam.	10	990								
Total.....	62	3,055	152	4,867						
Stickeen, B.C.—										
Great Britain.....Steam.	10	835								
United States..... "			41	620						
Total.....	10	835	41	620						
Summerside, P.E.I.—										
British W. Indies.....Sail...	1	99								
Newfoundland.....Steam.	5	1,705								
United States.....Sail...	2	547	5	2,530						
Total.....	8	2,351	5	2,530						

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
1	167	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	167
1	204	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	204
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	357
2	371	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	728
.....	.....	....	.....	....	.....	....	.....	2	542	.....	....	.....	2	542
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	12	133
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	73	1,144
.....	.....	....	.....	....	.....	....	.....	2	542	.....	....	.....	87	1,819
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	1,572
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	65
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	7	1,637
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	89	4,251
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	5	2,038
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	94	6,289
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	2,725
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	94
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	71
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	99
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	34	2,031
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	37	2,295
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	189	6,606
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	15	326
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	10	990
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	214	7,922
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	10	835
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	41	620
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	51	1,455
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	99
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	5	1,705
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	7	3,077
.....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	13	4,881

No. 12.—Statement of the Number of Tonnage of Steam

Ports and Outports and Countries whence arrived.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Sydney, N.S.—											
Great Britain	Steam.	111	331,996			13	17,173				
British W. Indies	"	2	3,244								
British W. Indies	Sail	1	99								
Newfoundland	Steam.	119	227,390			50	168,631				
Newfoundland	Sail	25	1,843								
French Africa	Steam.	2	5,550								
Sea, Cable and Admiralty	"	1	984			1	3,579				
France	"	66	203,846								
Egypt	"	1	2,804								
Portugal	"					1	745				
Saint Pierre	Sail	3	217								
United States	Steam.	41	80,988	1	920	9	15,776				
United States	Sail	3	653	15	229						
British W. Africa	Steam.	2	4,612								
Greece	"	1	2,825								
Gibraltar	"	20	56,250								
Italy	"	7	17,269								
Sea Fisheries	Sail			1	88						
Total		405	940,570	17	1,237	74	205,904				
Three Rivers, Que.—											
Great Britain	Steam.	20	43,965			1	651				
Tignish, P.E.I.—											
Sea Fisheries	Sail	3	94								
Truro, N.S.—											
Great Britain	Sail	1	283								
United States	"			3	626						
Total		1	283	3	626						
Tusket, N.S.—											
Sea Fisheries	Sail			3	274						
Union Bay, B.C.—											
Russia	Steam.	1	2,615								
United States	"	31	68,108	53	20,027	1	2,474				
United States	Sail	11	9,901	49	31,792						
Japan	Steam.	3	8,697	1	2,727	1	2,624				
British Oceania, other	"	1	4,921								
Total		47	94,242	103	54,546	2	5,098				
Vancouver, B.C.—											
Great Britain	Steam.	9	32,966								
Australia	"	29	130,428								
Australia	Sail			2	1,253						
Japan	Steam.	25	160,163								
Dutch East Indies	"	1	3,048								
Peru	"	9	23,670	6	19,392						
Peru	Sail										
China	Steam.	13	61,171			2	6,444				
Fiji Islands	"	2	4,366								
Philippines	"	3	11,745	1	3,192						

and Sailing Vessels entered Inwards *from Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													124	349,169
													2	3,244
													1	99
1	1,203												170	397,224
													25	1,843
													2	5,550
													2	4,563
													66	203,846
													1	2,804
													1	745
													3	217
								2	6,870				53	104,554
													18	882
													2	4,612
													1	2,825
													20	56,250
													7	17,269
													1	88
1	1,203							2	6,870				499	1,155,784
2	3,834												23	48,450
													3	94
													1	283
													3	626
													4	909
													3	274
													1	2,615
										Japanese	1	3,447	86	94,056
													60	41,693
													5	14,048
													1	4,921
											1	3,447	153	157,333
													9	32,966
													29	130,428
													2	1,253
4	12,016									Japanese	25	73,588	54	245,767
													1	3,048
													15	43,062
										Peruvian	1	650	1	650
1	3,004									Japanese	2	4,739	18	75,358
													2	4,366
													4	14,937

No. 12.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries whence arrived.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Vancouver, B.C.—*Con.*										
British S. Africa .....Sail...	....	.....	1	972	....	.....	....	.....	....	.....
Hawaii..... " ...	....	.....	1	1,105	1	831	....	.....	....	.....
Chili.....Steam.	....	.....	1	2,574	....	.....	....	.....	....	.....
Russia..... "	3	6,423	1	1,193	3	10,452	....	.....	....	.....
Brit. Straits Settl'm'ts "	....	.....	....	.....	1	3,487	....	.....	....	.....
United States..... "	735	983,373	581	390,493	9	31,767	....	.....	....	.....
United States.....Sail...	....	.....	1	686	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	105	5,991	17	1,591	....	.....	....	.....	....	.....
Total.....	934	1,423,344	612	422,451	16	52,981	....	.....	....	.....
Victoria, B.C.—										
Great Britain.....Steam.	13	36,204	....	.....	....	.....	....	.....	....	.....
British W. Indies..... "	1	2,013	....	.....	....	.....	....	.....	....	.....
Australia..... "	13	79,933	....	.....	....	.....	....	.....	....	.....
Australia.....Sail....	....	.....	1	1,011	....	.....	....	.....	....	.....
British S. Africa..... "	....	.....	1	1,011	....	.....	....	.....	....	.....
Chili.....Steam.	....	.....	1	3,622	....	.....	....	.....	....	.....
Chili.....Sail....	....	.....	....	.....	....	.....	....	.....	....	.....
China.....Steam.	35	219,997	....	.....	....	.....	....	.....	....	.....
Japan..... "	....	.....	....	.....	....	.....	....	.....	....	.....
United States..... "	664	595,558	639	491,002	3	9,956	....	.....	....	.....
United States.....Sail....	92	21,439	34	6,319	....	.....	....	.....	....	.....
Sea, Cable and Admiralty.....Steam.	4	10,113	....	.....	....	.....	....	.....	....	.....
Sea Fisheries..... "	7	208	....	.....	....	.....	....	.....	....	.....
Total.....	829	965,465	676	502,965	3	9,956	....	.....	....	.....
Westport, N.S.—										
United States.....Steam.	4	72	....	.....	....	.....	....	.....	....	.....
United States.....Sail....	7	468	....	.....	....	.....	....	.....	....	.....
Total.....	11	540	....	.....	....	.....	....	.....	....	.....
Weymouth, N.S.—										
United States.....Steam.	1	31	3	1,131	....	.....	....	.....	....	.....
United States.....Sail....	16	1,787	9	796	....	.....	....	.....	....	.....
Total.....	17	1,818	12	1,927	....	.....	....	.....	....	.....
White Roek, B.C.—										
United States.....Steam.	69	1,316	71	1,239	....	.....	....	.....	....	.....
Windsor, N.S.—										
United States.....Steam.	11	10,396	....	.....	....	.....	....	.....	....	.....
United States.....Sail....	61	67,648	43	36,040	....	.....	....	.....	....	.....
Total.....	72	78,044	43	36,040	....	.....	....	.....	....	.....
Wolfville, N.S.—										
United States.....Sail....	6	665	3	553	....	.....	....	.....	....	.....
Yarmouth, N.S.—										
British W. Indies.....Sail....	4	771	....	.....	....	.....	....	.....	....	.....
United States.....Steam.	159	140,796	3	3,154	....	.....	....	.....	....	.....
United States.....Sail....	37	6,087	54	2,485	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	2	22	....	.....	....	.....	....	.....	....	.....
Sea Fisheries.....Sail....	48	2,308	73	5,261	....	.....	....	.....	....	.....
Total.....	250	149,984	130	10,900	....	.....	....	.....	....	.....
York Faetory, Man.—										
Newfoundland.....Steam.	1	1,004	....	.....	....	.....	....	.....	....	.....

and Sailing Vessels entered Inwards *from Sea, etc.—Concluded.*

OF VESSELS.

Danish..		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	972
													2	1,936
													1	2,574
1	3,004									Japanese	6	19,177	14	40,249
										Japanese	6	15,484	7	18,971
										Japanese	4	12,662	1,329	1,418,295
													1	686
													122	7,582
6	18,024										44	126,300	1,612	2,043,100
													13	36,204
													1	2,013
													13	79,933
													1	1,011
													1	1,011
													1	3,622
										Chilian	1	1,179	1	1,179
										Japanese	29	125,955	64	345,952
										Japanese	38	135,343	38	135,343
										Japanese	59	235,021	1,365	1,331,537
													126	27,758
													4	10,113
													7	208
											127	497,498	1,635	1,975,884
													4	72
													7	468
													11	540
													4	1,162
													25	2,583
													29	3,745
	/												140	2,555
													11	10,396
													104	103,688
													115	114,084
													9	1,218
													4	771
													162	143,950
													91	8,572
													2	22
													121	7,569
													380	160,884
													1	1,004

No. 13.—Summary Statement of the Nationality of Sea-going Vessels entered March 31,

Number.	Countries from which Arrived.	Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
1	United Kingdom	1,313	4,366,336	16	13,145	124	150,945			4	8,303
2	Australia	57	251,939	3	2,264						
3	British South Africa	2	4,612	2	1,983	1	225				
4	British West Africa	2	4,612								
5	British West Indies	191	186,132	4	2,437	15	10,081				
6	British Oceania, Other	1	4,921								
7	British Straits Settlements					1	3,487				
8	Egypt	6	26,305								
9	Fiji Islands	2	4,366								
10	Gibraltar	51	143,589	1	1,799	2	3,118				
11	Malfa	1	2,475								
12	Newfoundland	1,411	627,412	22	3,327	64	195,987			1	3,663
13	Brazil										
14	Canary Islands	1	384			1	689				
15	Chili	2	8,075	2	6,196						
16	China	48	281,168			2	6,444				
17	Cuba	4	4,058								
18	Denmark					2	3,590				
19	Dutch East Indies	1	3,048								
20	France	175	531,843	2	5,404	19	28,651				
21	French Africa	9	30,325			4	5,192				
22	Greece	6	20,576								
23	Greenland, Iceland, etc										
24	Hawaii			1	1,105	1	831				
25	Holland					1	1,528				
26	Italy	27	68,199	2	6,052	1	1,411			2	2,084
27	Japan	29	172,009	1	2,727	1	2,624				
28	Mexico	6	13,783	2	6,081						
29	Nicaragua			2	1,671						
30	Norway	1	3,007			8	8,301				
31	Panama	1	124								
32	Peru	9	23,670	6	19,392						
33	Philippines	3	11,745	1	3,192						
34	Portugal	20	15,540			3	2,869				
35	Russia	4	9,038	1	1,193	3	10,452				
36	St. Pierre	40	5,475								
37	San Domingo			4	3,792	10	8,319				
38	Sea Fisheries	1,738	82,521	1,665	183,041						
39	Spain	11	14,357			10	6,579				
40	United States	4,550	3,498,680	6,591	2,120,086	173	371,715			11	23,087
41	Sea, Cable and Admiralty	15	25,911	9	2,115	3	6,094				
	Total	9,737	10,446,235	8,337	2,387,002	449	829,132			18	37,137

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Inwards *from Sea*, from each Country, during the Fiscal Year ended 1917.

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.		Number.
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name of Flag.	Vessels.	Tons Register.	Vessels.	Tons Register.	
65	38,989	4	7,403	....	.....	1	1,999	13	11,544	Brazilian....	2	466	1,553	4,610,738	1
										Swedish....	10	9,860			
										Uruguayan	1	1,748			
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	60	254,203	2
1	1,223	....	.....	....	.....	....	.....	....	.....	.....	....	.....	6	8,043	3
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	4,612	4
1	161	....	.....	....	.....	1	1,680	....	.....	.....	....	.....	212	200,491	5
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	4,921	6
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese....	6	15,484	7	18,971	7
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	6	26,305	8
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	4,366	9
2	2,366	....	.....	....	.....	3	9,135	1	288	.....	....	.....	60	160,295	10
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	2,475	11
6	2,841	2	432	....	.....	....	.....	....	.....	.....	....	.....	1,506	833,662	12
1	2,397	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	2,397	13
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	1,073	14
....	.....	....	.....	....	.....	....	.....	....	.....	Chilian.....	1	1,179	5	15,450	15
1	3,004	....	.....	....	.....	....	.....	....	.....	Japanese....	31	130,694	82	421,310	16
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	4,058	17
66	11,805	....	.....	....	.....	....	.....	3	1,028	.....	....	.....	71	16,423	18
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	3,048	19
19	4,507	4	3,054	....	.....	....	.....	7	3,046	.....	....	.....	226	576,505	20
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	13	35,517	21
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	6	20,576	22
26	4,532	....	.....	....	.....	....	.....	....	.....	Swedish....	1	417	27	4,949	23
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	1,936	24
....	.....	....	.....	....	.....	....	.....	....	.....	Dutch.....	2	3,937	3	5,465	25
2	3,469	....	.....	....	.....	14	54,257	....	.....	.....	....	.....	48	135,472	26
4	12,016	....	.....	....	.....	....	.....	....	.....	Japanese....	65	213,552	100	402,928	27
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	8	19,864	28
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	1,671	29
2	1,167	....	.....	....	.....	....	.....	....	.....	.....	....	.....	11	12,475	30
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	124	31
....	.....	....	.....	....	.....	....	.....	....	.....	Peruvian....	1	650	16	43,712	32
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	14,937	33
5	962	4	653	....	.....	....	.....	1	191	.....	....	.....	33	20,215	34
1	3,004	....	.....	....	.....	....	.....	2	4,518	Japanese....	6	19,177	17	47,382	35
....	.....	40	8,701	....	.....	....	.....	....	.....	.....	....	.....	80	14,176	36
....	.....	....	.....	....	.....	....	.....	....	.....	Cuban.....	1	1,151	15	13,262	37
1	81	1	58	....	.....	....	.....	....	.....	.....	....	.....	3,405	266,701	38
12	6,314	1	107	....	.....	....	.....	13	3,608	Spanish.....	1	2,289	49	33,321	39
										Swedish....	1	1,067			
36	59,951	....	.....	....	.....	5	12,947	7	20,007	Dutch.....	31	83,890			
										Japanese....	74	273,182	11,488	6,488,284	40
										Swedish....	10	24,739			
....	.....	3	3,348	....	.....	....	.....	....	.....	.....	....	.....	30	37,468	41
251	158.789	59	23,756	....	.....	24	80,018	47	44,230	.....	244	783,482	19,166	14,789,781	

No. 14.—STATEMENT of the Number and Tonnage of Steam and Sailing Vessels in Canada, for foreign countries, distinguishing the Nationality the Fiscal Year ended

Ports and Outports and Countries for which Departed.	NATIONALITY									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Albert, N.B.—										
Great Britain.....Sail....	1	246								
United States..... "	6	747								
Total.....	7	993								
Alberton, P.E.I.—										
Sea Fisheries.....Sail...	3	44								
Alert Bay, B.C.—										
United States.....Steam.	3	355	36	5,500						
Amherst, N.S.—										
Great Britain.....Sail..					1	1,198				
Annapolis Royal, N.S.—										
Cuba.....Sail...	1	397								
United States..... "	2	217	2	18						
Total.....	3	614	2	18						
Anyox, B.C.—										
United States.....Steam.	68	31,670	107	85,464						
Arichat, N.S.—										
Saint Pierre.....Sail...	1	96								
United States..... "	4	358	4	482						
Sea Fisheries..... "	79	1,677	12	892						
Total.....	84	2,131	16	1,374						
Baddeck, N.S.—										
Great Britain.....Steam.			1	190						
Newfoundland.....Sail....	28	2,123	1	85						
Saint Pierre..... "	1	46								
United States..... "	3	240	16	5,701						
Sea Fisheries..... "	24	647	4	312						
Total.....	56	3,056	22	6,288						
Barrington Passage, N.S.—										
United States.....Steam.			40	497						
United States.....Sail....	2	196								
Sea Fisheries.....Steam.	3	30	18	347						
Sea Fisheries.....Sail....	3	30	11	639						
Total.....	8	256	69	1,483						
Barton, N.S.—										
United States.....Sail....	19	2,063								
Bathurst, N.B.—										
Great Britain.....Steam.	5	10,334			4	3,970				
Great Britain.....Sail....					1	1,556				
Newfoundland.....Steam.										
France.....Sail....					1	145				
Spain.....Steam.					1	699				
United States.....Steam.										

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AND NATIONALITY OF VESSELS.

entered outwards, *for Sea*, at each of the undermentioned Ports and Outports of the Vessels employed in the trade with each country, during March 31, 1917.

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	246
													6	747
													7	993
													3	44
													39	5,855
2	494							1	399				4	2,091
													1	397
													4	235
													5	632
													175	117,134
													1	96
													8	840
													91	2,569
													100	3,505
													1	190
													29	2,203
													1	46
													19	5,941
													28	959
													78	9,344
													40	497
													2	196
													21	377
													14	669
													77	1,739
													19	2,063
													9	14,304
6	1,148									Swedish	1	225	8	2,929
1	1,223												1	1,223
													1	145
													1	699
1	1,223												1	1,223

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Bathurst. N.B.—*Con.*											
United States	Sail.			1	260						
Sea Fisheries	"	11	143								
Total		16	10,477	1	260	7	6,370				
Bear River, N.S.—											
British W. Indies	Sail.	3	632								
Cuba	Steam.	1	268								
United States	Sail.	16	2,019								
Total		20	2,919								
Belleveaus Cove, N.S.—											
British W. Indies	Sail.	3	597								
Porto Rico	"	1	64								
United States	"	1	90								
Total		5	751								
Bridgewater, N.S.—											
British W. Indies	Sail.	3	294								
Newfoundland	"	1	177								
Argentina	"	1	503	1	1,005	1	1,080				
Cuba	"	2	816	4	2,345						
Porto Rico	"	1	268								
Azores and Maderia	"	4	1,293								
United States	Steam.	1	110	6	778						
United States	Sail.	20	3,986	41	15,571						
Total		33	7,447	52	19,699	1	1,080				
Buctouche. N.B.—											
Great Britain	Sail.										
Campbellton, N.B.—											
Great Britain	Steam.	10	27,307			10	9,917				
Great Britain	Sail.					3	1,467				
Argentina	"					6	8,426				
France	Steam.									1	1,219
France	Sail.										
Portugal	"										
Total		10	27,307			19	19,810			1	1,219
Campo Bello, N.B.—											
United States	Steam.	118	20,447	38	1,101						
United States	Sail.	1	68	1	71						
Total		119	20,515	39	1,172						
Canning, N.S.—											
United States	Sail.	2	596								
Canso, N.S.—											
Newfoundland	Steam.			1	24						
Newfoundland	Sail.	4	242	3	320						
United States	Steam.	1	100	4	143						
United States	Sail.	14	1,195	17	1,890						
Sea Fisheries	Steam.	54	9,108	94	1,911						
Sea Fisheries	Sail.	57	5,071	122	8,047						
Total		130	15,716	241	12,335						

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
....	....	....	....	....	....	....	....	....	....	....	....	....	1	260
....	....	....	....	....	....	....	....	....	....	....	....	....	11	143
8	3,594	....	....	....	....	....	....	....	....	....	1	225	33	20,926
....	....	....	....	....	....	....	....	....	....	....	....	....	3	632
....	....	....	....	....	....	....	....	....	....	....	....	....	1	268
....	....	....	....	....	....	....	....	....	....	....	....	....	16	2,019
....	....	....	....	....	....	....	....	....	....	....	....	....	20	2,919
....	....	....	....	....	....	....	....	....	....	....	....	....	3	597
....	....	....	....	....	....	....	....	....	....	....	....	....	1	64
....	....	....	....	....	....	....	....	....	....	....	....	....	1	90
....	....	....	....	....	....	....	....	....	....	....	....	....	5	751
....	....	....	....	....	....	....	....	....	....	....	....	....	3	294
....	....	....	....	....	....	....	....	....	....	....	....	....	1	177
....	....	....	....	....	....	....	....	....	....	....	....	....	3	2,588
....	....	....	....	....	....	....	....	....	....	....	....	....	6	3,161
....	....	....	....	....	....	....	....	....	....	....	....	....	1	268
....	....	....	....	....	....	....	....	....	....	....	....	....	4	1,293
....	....	....	....	....	....	....	....	....	....	....	....	....	7	888
....	....	....	....	....	....	....	....	....	....	....	....	....	61	19,557
....	....	....	....	....	....	....	....	....	....	....	....	....	86	28,226
8	1,428	....	....	....	....	....	....	....	....	....	....	....	8	1,428
4	5,435	....	....	....	....	....	....	....	....	Swedish....	2	2,138	26	44,797
16	2,804	....	....	....	....	....	....	9	3,959	....	....	....	28	8,230
....	....	....	....	....	....	....	....	3	4,797	....	....	....	9	13,223
....	....	....	....	....	....	....	....	....	....	....	....	....	1	1,219
....	....	2	494	....	....	....	....	....	....	....	....	....	2	494
2	397	....	....	....	....	....	....	....	....	....	....	....	2	397
22	8,636	2	494	....	....	....	....	12	8,756	....	2	2,138	68	68,360
....	....	....	....	....	....	....	....	....	....	....	....	....	156	21,548
....	....	....	....	....	....	....	....	....	....	....	....	....	2	139
....	....	....	....	....	....	....	....	....	....	....	....	....	158	21,687
....	....	....	....	....	....	....	....	....	....	....	....	....	2	596
....	....	....	....	....	....	....	....	....	....	....	....	....	1	24
....	....	....	....	....	....	....	....	....	....	....	....	....	7	562
....	....	....	....	....	....	....	....	....	....	....	....	....	5	243
....	....	....	....	....	....	....	....	....	....	....	....	....	31	3,085
....	....	....	....	....	....	....	....	....	....	....	....	....	148	11,019
....	....	....	....	....	....	....	....	....	....	....	....	....	179	13,118
....	....	....	....	....	....	....	....	....	....	....	....	....	371	28,051

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which departed.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Caraquet, N.B.—										
Sea Fisheries.....Sail....	157	2,249	....	.....	....	.....	....	.....	....	.....
Cardigan, P.E.I.—										
Newfoundland.....Sail....	1	76	....	.....	....	.....	....	.....	....	.....
United States..... "	5	473	....	.....	....	.....	....	.....	....	.....
Total.....	6	549	....	.....	....	.....	....	.....	....	.....
Charlottetown, P.E.I.—										
Newfoundland.....Steam.	17	5,797	....	.....	....	.....	....	.....	....	.....
Newfoundland.....Sail....	6	406	....	.....	....	.....	....	.....	....	.....
Franee.....Steam.	2	5,089	....	.....	....	.....	....	.....	....	.....
Saint Pierre.....Sail....	3	213	....	.....	....	.....	....	.....	....	.....
United States.....Steam.	21	22,944	....	.....	....	.....	....	.....	....	.....
United States.....Sail....	4	469	....	.....	....	.....	....	.....	....	.....
Sea Fisheries..... "	3	37	....	.....	....	.....	....	.....	....	.....
Total.....	56	34,955	....	.....	....	.....	....	.....	....	.....
Chatham, N.B.—										
Great Britain.....Steam.	8	23,262	....	.....	10	9,405	....	.....	....	.....
Great Britain.....Sail....	....	.....	....	.....	3	3,794	....	.....	....	.....
Franee..... "	....	.....	....	.....	....	.....	....	.....	....	.....
United States.....Steam.	....	.....	18	19,839	....	.....	....	.....	....	.....
United States.....Sail....	10	1,469	3	1,687	....	.....	....	.....	....	.....
Total.....	18	24,731	21	21,526	13	13,199	....	.....	....	.....
Chemainus, B.C.—										
United States.....Steam.	21	4,199	46	1,219	....	.....	....	.....	....	.....
United States.....Sail....	....	.....	5	1,099	....	.....	....	.....	....	.....
British South Afriea .. "	....	.....	4	3,566	....	.....	....	.....	....	.....
British Oceania, other .Steam.	1	1,920	....	.....	....	.....	....	.....	....	.....
Total.....	22	6,119	55	5,884	....	.....	....	.....	....	.....
Chester, N.S.—										
United States.....Steam.	....	.....	1	30	....	.....	....	.....	....	.....
United States.....Sail....	3	272	7	90	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	2	21	....	.....	....	.....	....	.....	....	.....
Sea Fisheries.....Sail....	20	220	....	.....	....	.....	....	.....	....	.....
Total.....	25	513	8	120	....	.....	....	.....	....	.....
Cheticamp, N.S.—										
United States.....Sail...	....	.....	1	97	....	.....	....	.....	....	.....
Chicoutimi, Que.										
Great Britain.....Steam.	5	12,960	....	.....	....	.....	....	.....	....	.....
France..... "	4	7,362	....	.....	6	8,989	....	.....	....	.....
Spain..... "	....	.....	....	.....	....	.....	....	.....	....	.....
United States..... "	....	.....	5	6,350	....	.....	....	.....	....	.....
Total.....	9	20,322	5	6,350	6	8,989	....	.....	....	.....
Church Point, N.S.—										
Cuba.....Sail....	1	223	....	.....	....	.....	....	.....	....	.....
United States..... " ...	8	891	....	.....	....	.....	....	.....	....	.....
Total.....	9	1,114	....	.....	....	.....	....	.....	....	.....

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													157	2,249
													1	76
													5	473
													6	549
													17	5,797
													6	406
													2	5,089
													3	213
													21	22,944
													4	469
													3	37
													56	34,955
3	3,037							8	1,896				29	37,600
60	11,171												63	14,965
2	362												2	362
													18	19,839
										Uruguayan..	1	430	14	3,586
65	14,570							8	1,896		1	430	126	76,352
													67	5,418
													5	1,099
													4	3,566
													1	1,920
													77	12,003
													1	30
													10	362
													2	21
													20	220
													33	633
													1	97
													5	12,960
2	3,188												12	19,539
1	1,338												1	1,338
													5	6,350
3	4,526												23	40,187
													1	223
													8	891
													9	1,114

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Clarks Harbour, N.S.—										
United States.....Steam.	....	.....	41	575	....	.....	....	.....	....	.....
United States.....Sail....	3	205	....	.....	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	3	69	25	394	....	.....	....	.....	....	.....
Total.....	6	274	66	969	....	.....	....	.....	....	.....
Clementsport, N. S.....										
United States.....Sail....	12	1,576	....	.....	....	.....	....	.....	....	.....
Dalhousie, N.B.—										
Great Britain.....Steam.	2	5,130	....	.....	....	.....	....	.....	....	.....
Great Britain.....Sail....	....	.....	....	.....	1	1,043	....	.....	....	.....
France.....Steam.	....	.....	....	.....	1	1,527	....	.....	....	.....
United States..... "	2	2,260	4	3,678	....	.....	....	.....	....	.....
Total.....	4	7,390	4	3,678	2	2,570	....	.....	....	.....
Digby, N.S.....										
United States.....Steam.	1	888	4	81	....	.....	....	.....	....	.....
United States.....Sail....	13	6,568	7	606	....	.....	....	.....	....	.....
Total.....	14	7,456	11	687	....	.....	....	.....	....	.....
Dorchester, N.B.—										
United States.....Sail....	2	420	1	260	....	.....	....	.....	....	.....
Fredericton, N.B.—										
United States.....Sail....	3	952	12	2,574	....	.....	....	.....	....	.....
Gaspé, Que.....										
Great Britain.....Steam.	1	1,131	....	.....	7	8,395	....	.....	....	.....
Great Britain.....Sail....	1	146	3	1,065	2	2,662	....	.....	....	.....
British W. Indies..... "	2	196	....	.....	....	.....	....	.....	....	.....
France..... "	2	198	1	253	....	.....	....	.....	....	.....
United States.....Steam.	8	8,945	4	3,677	....	.....	....	.....	....	.....
United States.....Sail....	7	660	9	2,661	....	.....	....	.....	....	.....
Total.....	21	11,276	17	7,656	9	11,057	....	.....	....	.....
Georgetown, P.E.I.—										
Newfoundland.....Sail....	7	384	....	.....	....	.....	....	.....	....	.....
Glace Bay, N.S.—										
Great Britain.....Steam.	9	861	....	.....	....	.....	....	.....	....	.....
Great Britain.....Sail....	150	7,529	....	.....	....	.....	....	.....	....	.....
United States.....Steam.	....	.....	4	62	....	.....	....	.....	....	.....
Total.....	159	8,390	4	62	....	.....	....	.....	....	.....
Halifax, N.S.—										
Great Britain.....Steam.	192	866,676	3	5,908	4	4,416	....	.....	....	.....
Great Britain.....Sail....	11	4,859	11	3,767	18	19,378	....	.....	....	.....
British W. Indies.....Steam.	....	.....	....	.....	16	11,598	....	.....	....	.....
British W. Indies.....Sail....	6	2,570	....	.....	....	.....	....	.....	....	.....
Newfoundland.....Steam.	67	65,379	....	.....	1	3,578	....	.....	....	.....
Newfoundland.....Sail....	94	10,313	2	410	....	.....	....	.....	....	.....
Mexico.....Steam.	5	7,573	....	.....	....	.....	....	.....	....	.....
Brazil.....Sail....	7	1,892	....	.....	....	.....	....	.....	....	.....
Cuba..... "	2	486	....	.....	....	.....	....	.....	....	.....
France.....Steam.	17	32,675	....	.....	3	12,413	....	.....	1	1,219
France.....Sail....	....	.....	2	704	2	1,734	....	.....	....	.....
British Guiana.....Steam.	26	73,984	....	.....	....	.....	....	.....	....	.....
British Guiana.....Sail....	3	294	....	.....	....	.....	....	.....	....	.....
Holland.....Steam.	....	.....	1	2,723	13	22,073	....	.....	9	18,471

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
													41	575
													3	205
													28	463
													72	1,243
													12	1,576
3	3,579												5	8,709
2	397												3	1,440
													1	1,527
													6	5,938
5	3,976												15	17,614
													5	969
													20	7,174
													25	8,143
													3	680
													15	3,526
													8	9,526
3	664							2	590				11	5,127
													2	196
													3	451
													12	12,622
													16	3,321
3	664							2	590				52	31,243
													7	384
													9	861
													150	7,529
													4	62
													163	8,452
								2	2,545	Swedish	2	2,506	203	882,051
7	1,295	1	340					5	2,163	Swedish	1	204	54	32,006
													16	11,598
													6	2,570
													68	68,957
													96	10,723
													5	7,573
													7	1,892
													2	486
		1	4,236										22	50,543
		1	153										5	2,591
													26	73,984
													3	294
1	938									Dutch	14	30,612	38	74,817

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Halifax, N.S.—*Con.*										
Italy.....Steam.	1	2,475								
Norway..... "					20	50,206				
Denmark..... "			4	9,489	5	5,905				
Denmark.....Sail....					2	3,084				
New Zealand.....Steam.	3	18,293								
Russia..... "					1	2,474				
Saint Pierre..... "										
Saint Pierre.....Sail....	1	84								
Gibraltar.....Steam.	2	5,658								
Sweden..... "			2	5,387	1	2,313				
United States.....Steam.	187	568,856	29	40,197	22	55,826			2	4,632
United States.....Sail....	32	6,612	21	7,487	3	5,089				
Sea, Cable and Admiralty.....Steam.	78	244,502	6	1,410						
San Domingo..... "			1	948	2	1,818				
Bermuda..... "	1	7,029								
Danish East Indies....Sail....										
Canary Islands..... "			1	605						
Sea Fisheries.....Steam.	10	1,441								
Sea Fisheries.....Sail....	288	17,215	42	2,289						
Total.....	1·033	1,938,866	125	81,324	113	201,905			12	24,322
Hantsport, N.S—										
United States.....Steam.			10	3,008						
United States.....Sail....			6	1,300						
Total.....			16	4,308						
Hillsborough, N.B.—										
United States.....Sail....	8	7,574	11	4,747						
Indian Island, N.B.—										
United States.....Steam.	5	8	100	1,118						
Isaacs Harbour, N.S.—										
Newfoundland.....Sail....			1	74						
United States..... "	1	99								
Sea Fisheries.....Steam.	4	50	11	294						
Sea Fisheries.....Sail....			3	286						
Total.....	5	149	15	654						
Joggins Mines, N.S.—										
United States.....Sail....	14	1,739	6	1,201						
Kingsport, N.S.—										
Cuba.....Steam.	4	3,018								
Cuba.....Sail....	2	590								
United States..... "			1	145						
Total.....	6	3,608	1	145						
Ladner, B.C.—										
United States.....Steam.	1	128	2	632						
Ladysmith, B.C.—										
United States.....Steam.	43	9,002	84	30,903						
United States.....Sail.	42	5,968	81	26,385						
Total.....	85	14,970	165	57,288						

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
....	....	....	....	....	....	....	....	....	....	....	....	....	1	2,475
....	....	....	....	....	....	....	....	....	....	....	....	....	20	50,206
6	22,997	....	....	....	....	....	....	....	....	....	....	....	15	38,391
....	....	....	....	....	....	....	....	....	....	....	....	....	2	3,084
....	....	....	....	....	....	....	....	....	....	....	....	....	3	18,293
....	....	....	....	....	....	....	....	3	10,652	....	....	....	4	13,126
....	....	15	3,240	....	....	....	....	....	....	....	....	....	15	3,240
....	....	....	....	....	....	....	....	....	....	....	....	....	1	84
....	....	....	....	....	....	....	....	....	....	....	....	....	2	5,658
....	....	....	....	....	....	....	....	....	....	....	....	....	3	7,700
										Dutch	3	8,956		
										Swedish	3	3,274		
										Uruguayan	1	1,745		
2	5,432	....	....	....	....	....	....	1	4,119	Spanish	1	2,289	251	695,326
....	....	....	....	....	....	....	....	....	....	....	....	....	56	19,188
....	....	3	3,348	....	....	....	....	....	....	....	....	....	87	249,260
....	....	....	....	....	....	....	....	....	....	Cuban	1	1,151	4	3,917
1	161	....	....	....	....	....	....	....	....	....	....	....	1	7,029
....	....	....	....	....	....	....	....	....	....	....	....	....	1	161
....	....	....	....	....	....	....	....	....	....	....	....	....	1	605
....	....	....	....	....	....	....	....	....	....	....	....	....	10	1,441
....	....	....	....	....	....	....	....	....	....	....	....	....	330	19,504
17	30,823	21	11,317	....	....	....	....	11	19,479	....	26	50,737	1,358	2,358,773
....	....	....	....	....	....	....	....	....	....	....	....	....	10	3,008
....	....	....	....	....	....	....	....	....	....	....	....	....	6	1,300
....	....	....	....	....	....	....	....	....	....	....	....	....	16	4,308
....	....	....	....	....	....	....	....	....	....	....	....	....	19	12,321
....	....	....	....	....	....	....	....	....	....	....	....	....	105	1,126
....	....	....	....	....	....	....	....	....	....	....	....	....	1	74
....	....	....	....	....	....	....	....	....	....	....	....	....	1	99
....	....	....	....	....	....	....	....	....	....	....	....	....	15	344
....	....	....	....	....	....	....	....	....	....	....	....	....	3	286
....	....	....	....	....	....	....	....	....	....	....	....	....	20	803
....	....	....	....	....	....	....	....	....	....	....	....	....	20	2,940
....	....	....	....	....	....	....	....	....	....	....	....	....	4	3,018
....	....	....	....	....	....	....	....	....	....	....	....	....	2	590
....	....	....	....	....	....	....	....	....	....	....	....	....	1	145
....	....	....	....	....	....	....	....	....	....	....	....	....	7	3,753
....	....	....	....	....	....	....	....	....	....	....	....	....	3	760
....	....	....	....	....	....	....	....	....	....	....	....	....	127	39,905
....	....	....	....	....	....	....	....	....	....	....	....	....	123	32,353
....	....	....	....	....	....	....	....	....	....	....	....	....	250	72,258

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
La Have, N.S.—											
British W. Indies	Sail.	2	197								
Newfoundland	"	10	1,028								
United States	"	14	1,601								
Argentina	"	1	503								
Sea Fisheries	Steam.	1	11	14	924						
Sea Fisheries	Sail.	72	5,821	2	161						
Total		100	9,161	16	1,085						
Liverpool, N.S.—											
Great Britain	Sail.			1	78						
British. W. Indies	"	20	3,031								
Newfoundland	Steam.			2	174						
Newfoundland	Sail.	1	54	3	277						
Cuba	"			1	214						
Porto Rico	"	1	84								
United States	Steam.	1	20	14	1,353	1	898				
United States	Sail.	36	5,292	36	10,261						
Sea Fisheries	Steam.			80	3,781						
Sea Fisheries	Sail.			59	4,651						
Total		59	8,481	196	20,789	1	898				
Lockeport, N.S.—											
Newfoundland	Sail.	2	163								
United States	"	1	91	10	136						
Sea Fisheries	"	48	1,682	30	2,166						
Total		51	1,936	40	2,302						
Lord's Cove, N.B.—											
United States	Steam.	215	4,011	100	1,614						
Louisburg, N.S.—											
Great Britain	Steam.	12	31,477			49	79,045				
Newfoundland	"	87	53,929								
Newfoundland	Sail.	51	4,814	10	979						
British S. Africa	Steam.	1	2,304								
France	"	22	56,247			7	11,932			1	1,219
Egypt	"	1	2,749								
Holland	"					6	10,057			4	7,034
Italy	"	1	2,380								
Russia	"					1	2,127				
Saint Pierre	"	1	118								
Saint Pierre	Sail.	2	164								
United States	Steam.	74	110,859	3	6,999	2	1,668				
United States	Sail.	8	5,824	3	219						
Gibraltar	Steam.	2	5,524			4	9,297				
Sea, Cable and Admiralty	Steam.	29	79,003	2	470						
San Domingo	"			1	948						
Sea Fisheries	Sail.	5	377	155	6,465						
Total		296	355,769	174	16,080	69	114,126			5	28,253
Lower East Pubnico, N.S.—											
Newfoundland	Sail.	1	12	1	86						
United States	"	5	287	14	335						
Sea Fisheries	"	26	1,369	26	1,769						
Total		32	1,668	41	2,190						

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													2	197
													10	1,028
													14	1,601
													1	503
													15	935
													74	5,982
													116	10,246
													1	78
													20	3,031
													2	174
													4	331
													1	214
													1	84
													16	2,271
													72	15,553
													80	3,781
													59	4,651
													256	30,168
													2	163
													11	227
													78	3,848
													91	4,238
													315	5,625
19	25,642									Swedish	2	2,506		
										Dutch	1	1,597	83	140,267
													87	53,929
													61	5,793
													1	2,304
													30	69,398
													1	2,749
										Dutch	1	1,306	11	18,397
						2	5,921						3	8,301
													1	2,127
													1	118
													2	164
2	3,297									Dutch	1	1,671	82	124,494
													11	6,043
						1	3,540			Spanish	1	1,982	8	20,343
													31	79,473
													1	948
													160	6,842
21	28,939					3	9,461				6	9,062	574	541,690
													2	98
													19	622
													52	3,138
													73	3,858

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Lunenburg, N.S.—										
Great Britain.....Sail....	1	299	....	.....	....	.....	....	.....	....	.....
British W. Indies..... " ...	5	471	....	.....	....	.....	....	.....	....	.....
Newfoundland..... " ...	20	2,139	1	83	....	.....	....	.....	....	.....
Porto Rico..... " ...	22	2,219	....	.....	....	.....	....	.....	....	.....
United States.....Steam	....	.....	1	331	....	.....	....	.....	....	.....
United States.....Sail....	19	3,977	2	491	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	54	711	26	1,793	....	.....	....	.....	....	.....
Sea Fisheries.....Sail....	204	15,817	3	309	....	.....	....	.....	....	.....
Total.....	325	25,633	33	3,007	....	.....	....	.....	....	.....
Magdalen Islands, Que.—										
United States.....Sail....	7	533	13	957	....	.....	....	.....	....	.....
Mahone Bay, N.S.—										
Newfoundland.....Sail....	2	182	....	.....	....	.....	....	.....	....	.....
United States..... " ...	7	870	....	.....	....	.....	....	.....	....	.....
Sea Fisheries..... " ...	4	229	....	.....	....	.....	....	.....	....	.....
Total.....	13	1,281	....	.....	....	.....	....	.....	....	.....
Maitland, N.S.—										
United States.....Sail....	7	795	....	.....	....	.....	....	.....	....	.....
Meteghan River, N.S.—										
Cuba.....Sail....	1	47	....	.....	....	.....	....	.....	....	.....
Porto Rico..... " ...	3	410	....	.....	....	.....	....	.....	....	.....
United States..... " ...	5	518	....	.....	....	.....	....	.....	....	.....
Total.....	9	975	....	.....	....	.....	....	.....	....	.....
Moncton, N.B.—										
Great Britain.....Steam.	5	11,902	....	.....	....	.....	....	.....	....	.....
British W. Indies.....Sail....	1	281	....	.....	....	.....	....	.....	....	.....
France.....Steam.	1	3,050	....	.....	....	.....	....	.....	....	.....
Norway..... "	....	.....	....	.....	1	2,200	....	.....	....	.....
United States.....Sail....	....	.....	5	958	....	.....	....	.....	....	.....
Total.....	7	15,233	5	958	1	2,200	....	.....	....	.....
Montague Bridge, P.E.I.—										
Newfoundland.....Sail....	2	90	....	.....	....	.....	....	.....	....	.....
United States..... " ...	4	361	....	.....	....	.....	....	.....	....	.....
Total.....	6	451	....	.....	....	.....	....	.....	....	.....
Montreal, Que...										
Great Britain.....Steam.	268	1,091,469	....	.....	5	6,839	....	.....	1	4,729
Great Britain.....Sail....	....	.....	1	388	....	.....	....	.....	....	.....
Newfoundland.....Steam.	4	4,714	2	2,109	....	.....	....	.....	....	.....
Newfoundland.....Sail....	3	737	....	.....	....	.....	....	.....	....	.....
Sea, Cable and Admiralty.....Steam.	152	485,241	....	.....	....	.....	....	.....	....	.....
Gibraltar..... "	3	7,293	....	.....	2	4,544	....	.....	....	.....
France..... "	67	168,924	2	3,051	5	12,155	....	.....	....	.....
Australia..... "	5	20,546	....	.....	....	.....	....	.....	....	.....
Greece..... "	2	7,960	....	.....	....	.....	....	.....	....	.....
Italy..... "	2	4,526	....	.....	....	.....	....	.....	....	.....
British S. Africa..... "	8	21,658	....	.....	....	.....	....	.....	....	.....
Portugal..... "	....	.....	....	.....	1	1,411	....	.....	....	.....
United States..... "	3	6,075	26	25,516	3	4,013	....	.....	....	.....
United States.....Sail....	....	.....	4	2,490	....	.....	....	.....	....	.....
Total.....	517	1,819,143	35	33,554	16	28,962	....	.....	1	4,729

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	299
													5	471
													21	2,222
													22	2,21
													1	331
													21	4,468
													80	2,504
													207	16,126
													358	28,640
													20	1,490
													2	182
													7	870
													4	229
													13	1,281
													7	795
													1	47
													3	410
													5	518
													9	975
													5	11,902
													1	281
													1	3,050
													1	2,200
													5	958
													13	18,391
													2	90
													4	361
													6	451
4	5,845												278	1,108,882
													1	388
													6	6,823
													3	737
													152	485,241
						11	43,500						16	55,337
		10	13,144										84	197,274
													5	20,546
													2	7,960
						3	10,025						5	14,551
													8	21,658
													1	1,411
										Nicaraguan.	2	1,671	34	37,275
													4	2,490
4	5,845	10	13,144			14	53,525				2	1,671	599	1,960,573

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Moose Factory, Man.—											
Newfoundland	Steam.	1	1,541								
Murray Harbour, P.E.I.—											
Sea Fisheries	Sail.	4	113								
Nanaimo, B.C.—											
Russia	Steam.										
United States	"	159	46,725	322	94,053	19	53,182				
United States	Sail.	32	5,764	289	96,921						
Chili	Steam.			1	3,192						
Japan	"			1	3,121	1	4,135				
Sea Fisheries	"	48	4,739	26	792						
Total		239	57,228	639	198,079	20	57,317				
Newcastle, N.B.—											
Great Britain	Steam.	1	2,263			3	3,869				
Great Britain	Sail.										
France	Steam.					1	1,411			3	3,582
United States	Sail.	1	99	3	915						
Total		2	2,362	3	915	4	5,280			3	3,582
Newport, B.C.—											
United States	Steam.	131	42,823	61	16,335						
New Westminster, B.C.—											
Great Britain	Steam.	1	2,577								
United States	Steam.	5	354	23	4,308						
United States	Sail.			3	542						
British S. Africa	"			1	747						
Total		6	2,931	27	5,597						
North East Harbour, N.S.—											
United States	Sail.			1	366						
Sea Fisheries	"	3	99	4	250						
Total		3	99	5	616						
North Head, N.B.—											
United States	Steam.	182	22,361	20	274						
United States	Sail.			2	120						
Total		182	22,361	22	394						
North Sydney, N.S.—											
Great Britain	Steam.	2	4,886			3	2,811				
Great Britain	Sail.			1	388	1	576				
Newfoundland	Steam.	401	214,949	2	1,048	9	17,151				
Newfoundland	Sail.	190	13,337	6	594						
France	Steam.	16	37 191			9	12,561				
France	Sail.			1	253						
Saint Pierre	Steam.										
Saint Pierre	Sail.	8	577								
United States	Steam.	1	1,172			6	13,803				
United States	Sail.	6	490	2	280						
Sea Fisheries	"	36	2,524	27	2,420						
Total		660	275,126	39	4,983	28	46,902				

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	1,541
													4	113
										Japanese	2	4,518	2	4,518
										Japanese	15	38,992	515	232,952
													321	102,685
													1	3,192
										Japanese	5	10,676	7	17,932
													74	5,531
											22	54,186	920	366,810
													4	6,132
28	4,924	1	107					4	1,156	Swedish	1	762		
										Brazilian	1	235	35	7,184
													4	4,993
													4	1,014
28	4,924	1	107					4	1,156		2	997	47	19,323
													192	59,158
													1	2,577
													28	4,662
													3	542
													1	747
													33	8,528
													1	366
													7	349
													8	715
													202	22,635
													2	120
													204	22,755
													5	7,697
													2	964
		5	1,980										417	235,128
													196	13,931
		1	987										26	50,739
													1	253
		25	5,400										25	5,400
		1	130										9	707
													7	14,975
													8	770
1	81												64	5,025
1	81	32	8,497										760	335,589

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Ocean Falls, B.C.—											
United States	Steam.	3	4,077	10	9,273						
Parrsboro, N.S.—											
Great Britain	Steam.	1	2,927			2	2,470				
Great Britain	Sail	20	8,210	4	1,132	2	2,161				
France	Steam.	2	6,028			1	2,340				
United States	"	1	9	35	8,004						
United States	Sail	43	8,005	40	8,163						
Total		67	25,179	79	17,299	5	6,971				
Paspebiac, Que.—											
Great Britain	Steam.					4	3,364				
Great Britain	Sail	1	187			6	3,431				
British W. Indies	"	1	147								
France	Steam.	3	8,352			1	1,411				
United States	Sail	2	156								
Total		7	8,842			11	8,206				
Perce, Que.—											
United States	Sail	4	215								
Pictou, N.S.—											
Great Britain	Sail			1	84	2	2,358				
Newfoundland	"	1	92								
France	Steam.	4	10,248			2	3,391			1	1,115
United States	Sail										
Total		5	10,340	1	84	4	5,749			1	1,115
Port Alberni, B.C.—											
United States	Steam.	3	1,197	7	3,260						
Port Clyde, N.S.—											
United States	Sail	2	369	2	459						
Sea Fisheries	"	1	15								
Total		3	384	2	459						
Port Hawkesbury, N.S.—											
British W. Indies	Sail	2	395								
Newfoundland	"			1	24						
Cuba	"			1	519						
Saint Pierre	"	1	70								
United States	Steam.	18	19,404	3	1,839						
United States	Sail	13	1,237	12	1,275						
Sea Fisheries	"	16	1,192	25	2,202						
Total		50	22,298	42	5,859						
Port Hood, N.S.—											
Sea Fisheries	Sail			3	282						
Port La Tour, N.S.—											
Sea Fisheries	Steam.	3	34								
Sea Fisheries	Sail			3	200						
Total		3	34	3	200						

and Sailing Vessels entered Outwards, *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
													13	13,350
													3	5,397
1	367												27	11,870
													3	8,368
													36	8,013
													83	16,168
1	367												152	49,816
													4	3,364
10	1,655							2	597	Brazilian..	1	231	21	6,268
										Portuguese	1	167		
													1	147
													4	9,763
													2	156
10	1,655							2	597		2	398	32	19,698
													4	215
										Swedish....	1	417	4	2,859
													1	92
													7	14,754
										Nicaraguan.	1	199	1	199
											2	616	13	17,904
													10	4,457
													4	828
													1	15
													5	843
													2	395
													1	24
													1	519
													1	70
													21	21,243
										Nicaraguan.	1	199	26	2,711
													41	3,394
											1	199	93	28,356
													3	282
													3	34
													3	200
													6	234

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality	British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Port Mulgrave, N.S.—											
Great Britain	Steam.	1	2,094								
United States	"			13	7,285						
United States	Sail.			2	1,671						
Sea fisheries	"	7	617	3	289						
Total		8	2,711	18	9,245						
Port Simpson, B.C.—											
United States	Steam.	3	1,899	9	246						
Port Wade, N.S.—											
United States	Sail.	5	490	1	6						
Port Williams, N.S.—											
Cuba	Sail.	1	299								
Powell River, B.C.—											
Australia	Steam.	15	41,446								
United States	"	1	1,904	107	47,427						
Total		16	43,350	107	47,427						
Prince Rupert, B.C.—											
United States	Steam.	143	148,294	137	136,076						
Japan	Sail.										
Sea Fisheries	Steam.	444	11,241	745	14,303						
Total		587	159,535	882	150,379						
Pugwash, N.S.—											
Great Britain	Sail.					3	2,994				
France	Steam.					1	1,538				
Total						4	4,532				
Quebec, Que.—											
Great Britain	Steam.	70	228,845			8	10,259				
Newfoundland	"	23	4,421								
Newfoundland	Sail.	12	756								
France	Steam.	10	48,989								
Russia	"										
United States	"	1	1,905	7	5,976	2	2,870				
Total		116	284,916	7	5,976	10	13,129				
Richibucto, N.B.—											
Great Britain	Sail.					1	154				
Rimouski, Que.—											
Great Britain	Steam.	30	197,003			1	1,117				
Great Britain	Sail.					3	2,383				
United States	Steam.	7	6,186								
Argentina	Sail.					2	3,134				
Total		37	203,189			6	6,634				
River Hebert, N.S.—											
United States	Sail.	1	209								

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													1	2,094
													13	7,285
													2	1,671
													10	906
													26	11,956
													12	2,145
													6	496
													1	299
													15	41 446
										Japanese	1	2,370	109	51,701
											1	2,370	124	93,147
													280	284,370
										Japanese	1	204	1	204
													1,189	25,544
											1	204	1,470	310,118
								1	321	Swedish	1	204	5	3,519
													1	1,538
								1	321		1	204	6	5,057
6	7,279					1	7,633						85	254,016
													23	4,421
													12	756
													10	48,989
								1	1,855				1	1,855
										Uraguayan	2	2,650	12	13,401
6	7,279					1	7,633	1	1,855		2	2,650	143	323,438
7	1,152												8	1,306
										Swedish	1	1,059	32	199,179
1	279									Swedish	1	1,115	5	3,777
													7	6,186
										Swedish	1	1,496	3	4,630
1	279										3	3,670	47	213,772
													1	209

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality	British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
St. Andrews, N.B.—											
United States	Steam.	245	16,099	1,081	49,995						
United States	Sail.	4	329	6	775						
Total		249	16,428	1,087	50,770						
St. George, N.B.—											
Great Britain	Steam.	1	1,808								
United States	"			63	2,164						
United States	Sail.	4	156	47	7,703						
Total		5	1,964	110	9,867						
Saint John, N.B.—											
Great Britain	Steam.	112	462,755			3	2,865				
Great Britain	Sail.	6	4,024	13	4,348	6	7,101				
British W. Indies	"	6	1,046	1	599						
France	Steam.	59	190,822			3	3,564				
France	Sail.										
Italy	Steam.					1	2,710				
Portugal	Sail.										
San Domingo	Steam.			2	1,896	4	3,333				
Greece	"	1	2,798								
United States	"	29	57,335	124	279,660	3	2,275				
United States	Sail.	90	6,600	431	21,232						
Canary Islands	"	2	833	2	1,190						
British S. Africa	Steam.	3	8,925								
Australia	"	3	10,000								
Argentina	Sail.			3	1,246						
Sea Fisheries	"	21	281	1	85						
Total		332	745,419	577	310,256	20	21,848				
St. Martins, N.B.—											
United States	Steam.			20	1,580						
United States	Sail.	20	8,585	12	3,432						
Sea Fisheries	"	2	27								
Total		22	8,612	32	5,012						
St. Peters, N.S.—											
Sea Fisheries	Sail.	1	11								
St. Stephen, N.B.—											
United States	Steam.	17	1,900	88	1,608						
United States	Sail.			15	2,740						
Total		17	1,900	103	4,348						
Sackville, N.B.—											
United States	Sail.			1	241						
Salmon River, N.S.—											
Great Britain	Sail.	5	219								
United States	"	1	71								
Sea Fisheries	"	2	21								
Total		8	311								
Sandy Cove, N.S.—											
United States	Steam.			2	12						
United States	Sail.			1	11						
Total				3	23						

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
....	....	....	....	....	....	....	....	....	....	....	....	....	1,326	66,094
....	....	....	....	....	....	....	....	....	....	....	....	....	10	1,104
....	....	....	....	....	....	....	....	....	....	....	....	....	1,336	67,198
....	....	....	....	....	....	....	....	....	....	....	....	....	1	1,808
....	....	....	....	....	....	....	....	....	....	....	....	....	63	2,164
....	....	....	....	....	....	....	....	....	....	....	....	....	51	7,859
....	....	....	....	....	....	....	....	....	....	....	....	....	115	11,831
4	3,905	....	....	....	....	....	....	....	....	....	....	....	119	469,525
8	1,327	1	452	....	....	....	....	2	929	....	....	....	36	18,181
....	....	....	....	....	....	....	....	....	....	....	....	....	7	1,645
....	....	3	2,865	....	....	....	....	....	....	....	....	....	65	197,251
1	225	....	....	....	....	....	....	....	....	....	....	....	1	225
....	....	....	....	....	....	10	28,153	....	....	....	....	....	11	30,863
1	143	....	....	....	....	....	....	....	....	....	....	....	1	143
....	....	....	....	....	....	....	....	....	....	....	....	....	6	5,229
....	....	....	....	....	....	....	....	....	....	....	....	....	1	2,798
....	....	....	....	....	....	2	4,501	....	....	....	....	....	158	343,771
....	....	....	....	....	....	....	....	....	....	....	....	....	521	27,832
....	....	....	....	....	....	....	....	....	....	....	....	....	4	2,023
....	....	....	....	....	....	....	....	....	....	....	....	....	3	8,925
....	....	....	....	....	....	....	....	....	....	....	....	....	3	10,000
1	917	....	....	....	....	....	....	....	....	....	....	....	4	2,163
....	....	....	....	....	....	....	....	....	....	....	....	....	22	366
15	6,517	4	3,317	....	....	12	32,654	2	929	....	....	....	962	1,120,940
....	....	....	....	....	....	....	....	....	....	....	....	....	20	1,580
....	....	....	....	....	....	....	....	....	....	....	....	....	32	12,017
....	....	....	....	....	....	....	....	....	....	....	....	....	2	27
....	....	....	....	....	....	....	....	....	....	....	....	....	54	13,624
....	....	....	....	....	....	....	....	....	....	....	....	....	1	11
....	....	....	....	....	....	....	....	....	....	....	....	....	105	3,508
....	....	....	....	....	....	....	....	....	....	....	....	....	15	2,740
....	....	....	....	....	....	....	....	....	....	....	....	....	120	6,248
....	....	....	....	....	....	....	....	....	....	....	....	....	1	241
....	....	....	....	....	....	....	....	....	....	....	....	....	5	219
....	....	....	....	....	....	....	....	....	....	....	....	....	1	71
....	....	....	....	....	....	....	....	....	....	....	....	....	2	21
....	....	....	....	....	....	....	....	....	....	....	....	....	8	311
....	....	....	....	....	....	....	....	....	....	....	....	....	2	12
....	....	....	....	....	....	....	....	....	....	....	....	....	1	11
....	....	....	....	....	....	....	....	....	....	....	....	....	3	23

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality									
	British.		United States.		Norwegian.		Austrian.		Belgian.	
	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Sandy Point, N.S.—										
Newfoundland.....Sail....	...	.....	2	188	....	.....	....	.....	....	.....
United States.....Steam.	2	1,202	....	.....	....	.....	....	.....	....	.....
United States.....Sail....	18	2,524	19	2,751	....	.....	....	.....	....	.....
Sea Fisheries..... "	3	35	132	11,125	....	.....	....	.....	....	.....
Total.....	23	3,761	153	14,064	....	.....	....	.....	....	.....
Shediac, N.B.—										
Great Britain.....Steam.	....	.....	....	.....	1	760	....	.....	....	.....
Newfoundland..... " .	5	467	....	.....	....	.....	....	.....	....	.....
Total.....	5	467	....	.....	1	760	....	.....	....	.....
Sheet Harbour, N.S.—										
Great Britain.....Sail....	....	.....	....	.....	....	.....	....	.....	....	.....
Sea Fisheries..... "	1	17	....	.....	....	.....	....	.....	....	.....
Total.....	1	17	....	.....	....	.....	....	.....	....	.....
Shelburne, N.S.—										
British W. Indies.....Sail....	4	512	....	.....	....	.....	....	.....	....	.....
Newfoundland..... "	7	834	5	516	....	.....	....	.....	....	.....
United States.....Steam.	....	.....	2	467	....	.....	....	.....	....	.....
United States.....Sail....	7	696	10	4,767	....	.....	....	.....	....	.....
Sea Fisheries..... "	16	460	31	2,738	....	.....	....	.....	....	.....
Total.....	34	2,502	48	8,488	....	.....	....	.....	....	.....
Sherbrooke, N.S.—										
Great Britain.....Sail....	....	.....	....	.....	....	.....	....	.....	....	.....
France..... "	....	.....	....	.....	....	.....	....	.....	....	.....
United States..... "	3	813	3	1,128	....	.....	....	.....	....	.....
Total.....	3	813	3	1,128	....	.....	....	.....	....	.....
Shippegan, N.B.—										
United States.....Sail....	2	186	....	.....	....	.....	....	.....	....	.....
Sea Fisheries.....Steam.	14	153	....	.....	....	.....	....	.....	....	.....
Sea Fisheries.....Sail....	79	1,140	1	92	....	.....	....	.....	....	.....
Total.....	95	1,479	1	92	....	.....	....	.....	....	.....
Shusharti Bay, B.C.—										
United States.....Steam.	1	60	6	1,622	....	.....	....	.....	....	.....
Sea Fisheries..... "	....	.....	1	15	....	.....	....	.....	....	.....
Total.....	1	60	7	1,637	....	.....	....	.....	....	.....
Sidney, B.C.—										
United States.....Steam.	28	412	44	556	....	.....	....	.....	....	.....
Unites Stated.....Sail....	1	201	2	245	....	.....	....	.....	....	.....
Total.....	29	613	46	801	....	.....	....	.....	....	.....
Sorel, Que.—										
Newfoundland.....Steam.	1	147	....	.....	....	.....	....	.....	....	.....
Newfoundland.....Sail....	3	280	....	.....	....	.....	....	.....	....	.....
Total.....	4	427	....	.....	....	.....	....	.....	....	.....

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name.	Vessels.	Tons Register.	Vessels.	Tons Register.
													2	188
													2	1,202
													37	5,275
													135	11,160
													176	17,825
													1	760
													5	467
													6	1,227
1	196												1	196
													1	17
1	196												2	213
													4	512
													12	1,350
		1	1,116										3	1,583
													17	5,463
													47	3,198
		1	1,116										83	12,106
1	167												1	167
1	204												1	204
													6	1,941
2	371												8	2,312
													2	186
													14	153
													80	1,232
													96	1,571
													7	1,682
													1	15
													8	1,697
													72	968
													3	446
													75	1,414
													1	147
													3	280
													4	427

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which Departed.	Nationality	British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Souris, P.E.I.—											
Newfoundland	Sail.	2	141								
Saint Pierre	"	4	335								
United States	"	1	96	1	44						
Sea Fisheries	Steam.	1	32								
Sea Fisheries	Sail.	36	1,422	11	865						
Total		44	2,026	12	909						
Steveston, B.C.—											
United States	Steam.	51	1,457	137	4,529						
United States	Sail.	1	6	16	346						
Sea Fisheries	Steam.	3	68	1	22						
Total		55	1,531	154	4,897						
Stickeen, B.C.—											
Great Britain	Steam.			11	838						
United States	"			40	592						
Total				51	1,430						
Summerside, P.E.I.—											
Newfoundland	Steam.	17	5,732								
Newfoundland	Sail.	1	78								
Total		18	5,810								
Sydney, N.S.—											
Great Britain	Steam.	18	46,443			20	22,426				
Newfoundland	"	119	222,394	1	318	50	168,577				
Newfoundland	Sail.	338	23,310								
Gibraltar	Steam.	4	9,727								
France	"	61	136,414	1	805	15	25,598			3	3,470
Holland	"					2	2,664				
Italy	"	1	2,209								
Norway	"					1	1,329				
Russia	"										
Saint Pierre	"										
Saint Pierre	Sail.	9	635								
United States	Steam.	32	63,584	4	4,105	5	10,610				
British S. Africa	"	7	20,508								
Australia	"	2	6,266								
Sea Cable & Admiralty	"	73	226,654								
Sea Fisheries	Sail.			18	358						
Total		664	758,144	24	5,586	93	231,204			3	3,470
Three Rivers, Que.—											
Great Britain	Steam.	20	43,965			1	651				
Tignish, P.E.I.—											
Sea Fisheries	Sail.	4	206								
Truro, N.S.—											
Great Britain	Sail.			1	357						
United States	"	2	255	2	432						
Total		2	255	3	789						
Tusket, N.S.—											
Sea Fisheries	Sail.	1	11	3	274						

SESSIONAL PAPER No. 11a

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	141
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	335
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	140
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	32
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47	2,287
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56	2,935
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	188	5,986
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	352
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	90
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	209	6,428
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	838
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40	592
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	51	1,430
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17	5,732
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	78
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	5,810
13	14,958	.....	.....	.....	.....	.....	.....	.....	.....	Swedish....	3	3,197	54	87,024
.....	.....	5	1,080	.....	.....	.....	.....	.....	.....	.....	.....	.....	175	392,369
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	338	23,310
.....	.....	.....	.....	.....	.....	10	40,367	.....	.....	.....	.....	.....	14	50,094
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	166,287
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2,664
.....	.....	.....	.....	.....	.....	1	2,470	.....	.....	.....	.....	.....	2	4,679
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1,329
.....	.....	.....	.....	.....	.....	.....	.....	2	6,870	.....	.....	.....	2	6,870
.....	.....	4	864	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	864
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	635
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41	78,299
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	20,508
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6,266
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	73	226,654
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	358
...13	14,958	9	1,944	.....	.....	11	42,837	2	6,870	.....	3	3,197	822	1,068,210
2	3,834	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	48,450
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	206
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	357
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	687
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1,044
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	285

No. 14.—Statement of the Number and Tonnage of Steam

Ports and Outports and Countries for which departed.		Nationality: British. Vessels.	British. Tons Register.	United States. Vessels.	United States. Tons Register.	Norwegian. Vessels.	Norwegian. Tons Register.	Austrian. Vessels.	Austrian. Tons Register.	Belgian. Vessels.	Belgian. Tons Register.
Union Bay, B.C.—											
Russia	Steam.	3	7,669			1	2,474				
United States	"	46	137,038	57	24,039	3	7,486				
United States	Sail.	3	669	53	36,271						
Japan	Steam.	2	6,132								
British Oceania, other.	"	3	13,440								
Total		57	164,948	110	60,310	4	9,960				
Vancouver, B.C.—											
Great Britain	Steam.	11	37,051								
Australia	"	31	129,880								
China	"	25	154,066			1	1,719				
Japan	"	1	8,789								
Chili	"			1	3,192						
Peru	"	8	19,380	1	1,188						
Fiji Islands	"			1	491						
Fiji Islands	Sail.			1	691						
Panama	"	1	124								
Russia	Steam.	8	22,471	7	14,421	4	13,938				
Philippines	"	10	62,848								
British S. Africa	Sail.			3	2,411	1	831				
United States	Steam.	746	720,815	581	396,491	10	32,137				
United States	Sail.										
Sea Fisheries	Steam.	25	1,641	17	1,796						
Total		866	1,157,065	612	420,681	16	48,625				
Victoria, B.C.—											
Great Britain	Steam.	5	12,442								
Australia	"	13	79,933								
British S. Africa	Sail.			4	3,708						
China	Steam.	35	219,519								
Fiji Islands	Sail.			1	491						
Japan	Steam.										
Russia	"					1	4,410				
United States	"	670	894,866	603	484,648	3	9,966				
United States	Sail.	69	18,043	29	4,212						
Sea Fisheries	"	12	370								
Total		804	1,225,173	637	493,059	4	14,376				
Westport, N.S.—											
United States	Steam.	5	90								
United States	Sail.	3	83								
Total		8	173								
Weymouth, N.S.—											
British W. Indies	Sail.			1	204						
Newfoundland	"	1	219								
Cuba	"	1	377	2	825						
United States	Steam.			3	1,131						
United States	Sail.	23	2,760	10	2,266						
Total		25	3,356	16	4,426						
White Rock, B.C.—											
United States	Steam.	78	1,704	72	1,253						

and Sailing Vessels entered Outwards *for Sea, etc.—Continued.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	10,143
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	106	168,563
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	56	36,940
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	6,132
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	13,440
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	171	235,218
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	11	37,051
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	31	129,880
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	26	155,785
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese....	13	42,521	14	51,310
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	3,192
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	9	20,568
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	491
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	691
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	124
4	12,016	....	.....	....	.....	....	.....	1	685	Japanese....	11	34,816	35	98,347
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	10	62,848
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	3,242
2	6,008	....	.....	....	.....	....	.....	....	.....	Japanese....	18	46,698	1,357	1,202,149
....	.....	....	.....	....	.....	....	.....	....	.....	Peruvian....	1	650	1	650
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	42	3,437
6	18,024	....	.....	....	.....	....	.....	1	685	.....	43	124,685	1,544	1,769,765
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	5	12,442
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	13	79,933
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	3,708
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese....	25	109,165	60	328,684
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	491
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese....	33	122,180	33	122,180
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	4,410
....	.....	....	.....	....	.....	....	.....	....	.....	Chilian....	1	1,179	1,346	1,657,820
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese...	69	267,161	....	.....
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	98	22,255
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	12	370
....	.....	....	.....	....	.....	....	.....	....	.....	.....	128	499,685	1,573	2,232,293
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	5	90
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	83
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	8	173
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	204
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	219
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	1,202
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	1,131
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	33	5,026
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	41	7,782
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	150	2,957

No. 14.—STATEMENT of the Number and Tonnage of Steam

Ports and Outports and Countries for which departed.		Nationality									
		British.		United States.		Norwegian.		Austrian.		Belgian.	
		Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
Windsor, N.S.—											
United States	Steam.	18	17,327								
United States	Sail.	79	77,620	48	37,011						
Total		97	94,947	48	37,011						
Yarmouth, N.S.—											
British W. Indies	Sail.	2	196	1	360						
Newfoundland	"	1	12								
Cuba	"	2	713								
United States	Steam.	169	150,784	6	5,394						
United States	Sail.	17	1,130	42	986						
Sea Fisheries	Steam.	2	22								
Sea Fisheries	Sail.	61	2,687	74	5,405						
Total		254	155,544	123	12,145						
York Factory, Man.—											
Newfoundland	Steam.	1	1,004								

and Sailing Vessels entered Outwards *for Sea, etc.—Concluded.*

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.	
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Names.	Vessels.	Tons Register.	Vessels.	Tons Register.
													18	17,327
													127	114,631
													145	131,958
													3	556
													1	12
													2	713
													175	156,178
													59	2,116
													2	22
													135	8,092
													377	167,689
													1	1,004

No. 15.—Summary Statement of the Nationality of Sea-going Vessels entered

Number.	Countries to which Departed.	Nationality									
		British		United States		Norwegian		Austrian		Belgian	
		Vessels	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.
1	United Kingdom	986	3,153,287	51	18,543	188	224,835	....	.....	1	4,729
2	Australia	69	288,071	.....	.....	.....	.....	....	.....	....	.....
3	British South Africa	19	53,395	12	10,432	1	831	....	.....	....	.....
4	British Guiana	29	74,278	.....	.....	.....	.....	....	.....	....	.....
5	British West Indies	60	10,565	3	1,163	16	11,598	....	.....	....	.....
6	British Oceania, other	4	15,360	.....	.....	.....	.....	....	.....	....	.....
7	Bermuda	1	7,029	.....	.....	.....	.....	....	.....	....	.....
8	Egypt	1	2,749	.....	.....	.....	.....	....	.....	....	.....
9	Fiji Islands	.....	.....	3	1,673	.....	.....	....	.....	....	.....
10	Gibraltar	11	28,202	.....	.....	6	13,841	....	.....	....	.....
11	Newfoundland	1,532	642,473	44	7,309	60	189,306	....	.....	....	.....
12	New Zealand	3	18,293	.....	.....	.....	.....	....	.....	....	.....
13	Argentina	2	1,006	4	2,251	9	12,640	....	.....	....	.....
14	Azores and Madeira	4	1,293	.....	.....	.....	.....	....	.....	....	.....
15	Brazil	7	1,892	.....	.....	.....	.....	....	.....	....	.....
16	Canary Islands	2	833	3	1,795	....	.....	....	.....	....	.....
17	Chili	.....	.....	2	6,384	.....	.....	....	.....	....	.....
18	China	60	373,585	.....	.....	1	1,719	....	.....	....	.....
19	Cuba	18	7,234	8	3,903	....	.....	....	.....	....	.....
20	Denmark	.....	.....	4	9,489	7	8,989	....	.....	....	.....
21	Danish West Indies	.....	.....	.....	.....	.....	.....	....	.....	....	.....
22	France	270	711,589	7	5,066	58	100,709	....	.....	10	11,824
23	Greece	3	10,758	.....	.....	.....	.....	....	.....	....	.....
24	Holland	.....	.....	1	2,723	21	34,794	....	.....	13	25,505
25	Italy	5	11,590	.....	.....	1	2,710	....	.....	....	.....
26	Japan	3	14,921	1	3,121	1	4,135	....	.....	....	.....
27	Mexico	5	7,573	.....	.....	.....	.....	....	.....	....	.....
28	Norway	.....	.....	.....	.....	22	53,735	....	.....	....	.....
29	Panama	1	124	.....	.....	.....	.....	....	.....	....	.....
30	Peru	8	19,380	1	1,188	....	.....	....	.....	....	.....
31	Philippines	10	62,848	.....	.....	.....	.....	....	.....	....	.....
32	Portugal	.....	.....	.....	.....	1	1,411	....	.....	....	.....
33	Porto Rico	28	3,045	.....	.....	.....	.....	....	.....	....	.....
34	Russia	11	30,140	7	14,421	8	25,423	....	.....	....	.....
35	St. Pierre	31	2,338	.....	.....	.....	.....	....	.....	....	.....
36	San Domingo	.....	.....	4	3,792	6	5,151	....	.....	....	.....
37	Sea Fisheries	1,981	93,247	1,863	80,943	....	.....	....	.....	....	.....
38	Spain	.....	.....	.....	.....	1	699	....	.....	....	.....
39	Sweden	.....	.....	2	5,387	1	2,313	....	.....	....	.....
40	United States	4,395	3,359,588	5,859	2,162,357	82	199,823	....	.....	2	4,632
41	Sea, Cable and Admiralty	332	1,035,400	8	1,880	....	.....	....	.....	....	.....
	Total	9,891	10,042,086	7,887	2,343,820	490	894,662	....	.....	26	46,690

SESSIONAL PAPER No. 11a

Outwards, *for Sea*, for each Country, during the Fiscal year ended March 31, 1917.

OF VESSELS.

Danish.		French.		German.		Italian.		Russian.		Other Nationalities.			Total.		
Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Vessels.	Tons Register.	Name of Flag.	Vessels.	Tons Register.	Vessels.	Tons Register.	Number.
219	102,982	3	899	....	.....	1	7,633	36	14,555	Brazilian...	2	466			
										Dutch.....	1	1,597			
										Portuguese	1	167			
										Swedish...	16	14,333	1,505	3,544,026	1
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	69	288,071	2
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	32	64,658	3
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	29	74,278	4
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	79	23,326	5
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	15,360	6
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	7,029	7
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	2,749	8
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	1,673	9
....	.....	....	.....	....	.....	22	87,407	....	.....	Spanish.....	1	1,982	40	131,432	10
1	1,223	10	3,060	....	.....	....	.....	....	.....	.....	....	.....	1,647	843,371	11
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	18,293	12
1	917	....	.....	....	.....	....	.....	3	4,797	Swedish....	1	1,496	20	23,107	13
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	1,293	14
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	7	1,892	15
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	5	2,628	16
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	6,384	17
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese....	25	109,165	86	484,469	18
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	26	11,137	19
6	22,997	....	.....	....	.....	....	.....	....	.....	.....	....	.....	17	41,475	20
1	161	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	161	21
6	3,979	18	21,879	....	.....	....	.....	....	.....	.....	....	.....	369	855,046	22
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	10,758	23
1	938	....	.....	....	.....	....	.....	....	.....	Dutch.....	15	31,918	51	95,878	24
....	.....	....	.....	....	.....	16	46,569	....	.....	.....	....	.....	22	60,869	25
....	.....	....	.....	....	.....	....	.....	....	.....	Japanese....	52	175,581	57	197,758	26
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	5	7,573	27
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	22	53,735	28
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	1	124	29
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	9	20,568	30
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	10	62,848	31
3	540	....	.....	....	.....	....	.....	....	.....	.....	....	.....	4	1,951	32
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	28	3,045	33
4	12,016	....	.....	....	.....	....	.....	7	20,062	Japanese....	13	39,334	50	141,396	34
....	.....	45	9,634	....	.....	....	.....	....	.....	.....	....	.....	76	11,972	35
....	.....	....	.....	....	.....	....	.....	....	.....	Cuban.....	1	1,151	11	10,094	36
1	81	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3,845	174,271	37
1	1,338	....	.....	....	.....	....	.....	....	.....	.....	....	.....	2	2,037	38
....	.....	....	.....	....	.....	....	.....	....	.....	.....	....	.....	3	7,700	39
7	15,960	1	1,116	....	.....	2	4,501	1	4,119	Chilian....	1	1,179			
										Dutch.....	4	10,627			
										Japanese...	103	355,221			
										Nicaraguan	4	2,069			
...	.....	....	.....	....	.....	....	.....	....	.....	Peruvian...	1	650			
										Spanish....	1	2,289			
										Swedish...	3	3,274			
										Uruguayan	4	4,825	10,470	6,132,230	40
....	.....	3	3,348	....	.....	....	.....	....	.....	.....	....	.....	343	1,040,628	41
251	163,132	80	39,936	....	.....	41	146,110	47	43,533	.....	249	757,324	18,962	14,477,293	

No. 16.—Statement showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage) which arrived at each Port and Outport during the Fiscal Year ended March 31, 1917.

VESSELS ARRIVED.

Number.	Ports and Outports.	Canadian.						United States.					
		Steam.			Sail.			Steam.			Sail.		
		Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.
1	Amherstburg, Ont.	40	3,189	190	2	108	8	814	247,665	14,101	33	6,368	234
2	Bath, Ont.	3	36	6	8	1,264	36						
3	Belleville, Ont.	3	168	17	49	9,539	251						
4	Blind River, Ont.	16	4,428	166	8	3,144	49	55	21,686	826	34	17,676	227
5	Bowmanville, Ont.				4	1,304	24						
6	Bridgeburg, Ont.							119	6,219	486	249	79,970	633
7	Brockville, Ont.	96	160,234	8,064	3	2,253	18	623	102,256	8,017	29	9,302	170
8	Bruce Mines, Ont.	83	2,942	486				44	6,675	376	1	1,077	10
9	Byng Inlet, Ont.	6	12,222	120				55	820,117	1,284	3	1,742	24
10	Cardinal, Ont.	51	8,415	510				143	14,054	1,026			
11	Chatham, Ont.	78	23,634	1,404				10	684	83	8	2,528	61
12	Chicoutimi, Que.	21	16,724	351	3	2,380	18	2	1,489	36	1	198	6
13	Chippawa, Ont.							3	217	7	6	624	9
14	Clarenceville, Que.							1	119	9			
15	Cobourg, Ont.	630	2,060,177	23,109	1	198	5						
16	Cockburn Island, Ont.	12	289	72				12	1,428	97	11	2,218	48
17	Collingwood, Ont.	2	1,575	34				9	10,073	177			
18	Cornwall, Ont.	3	1,165	21				149	6,195	597			
19	Courtright, Ont.	1	48	7	1	230	4	1,543	246,822	18,498			
20	Cutler, Ont.	8	2,677	86	4	1,449	24	43	17,874	638	53	28,017	356
21	Dawson, Y. T.	1	491	25	8	1,540	16	19	8,972	527	13	5,327	26
22	Depot Harbour, Ont.	4	7,631	74				88	208,198	2,268			
23	Deseronto, Ont.	8	5,023	144	10	1,292	33	17	14,480	338			
24	Ellis Bay, Que.	1	542	18									
25	Forty Mile, Y. T.	10	1,937	92	7	1,374	7	22	10,080	602	15	5,837	15
26	Fort Frances, Ont.	39	738	153									
27	Fort William, Ont.	127	368,501	6,617				868	2,217,561	22,592	19	38,957	154
28	Gananoque, Ont.	651	5,486	953	11	2,151	49	1,428	25,680	4,666	3	612	12
29	Georgeville, Que.	1	55	4									
30	Goderich, Ont.	121	173,636	2,294	1	1,951	8	13	7,129	435			
31	Gore Bay, Ont.	29	7,498	402				1	1,541	24	1	474	8
32	Hamilton, Ont.	5	3,015	225									
33	Iroquois, Ont.							166	16,223	1,083			

34	Kenora, Ont.	28	420	88				8	160	48			
35	Key Harbour, Ont.	15	23,760	270				8	9,295	162	4	5,940	31
36	Kincardine, Ont.	3	75	16	1	127	5	8	2,114	110	1	268	7
37	Kingston, Ont.	812	451,084	8,494	283	83,857	1,323	464	25,197	3,762	9	4,628	62
38	Kingsville, Ont.	3	320	18				8	938	47			
39	Leamington, Ont.							3	169	19	1	527	8
40	Levis, Que.	45	39,387	684							49	13,361	151
41	Little Current, Ont.	55	51,513	1,075	4	1,248	24	43	38,323	842	15	7,296	102
42	Magog, Que.	1	55	4									
43	Meaford, Ont.							5	2,135	69	6	1,440	41
44	Michipicoten Harbour, Ont.	16	22,489	283				23	37,587	440	5	10,966	41
45	Midland, Ont.	13	15,590	224	1	516	7	74	156,507	1,723	1	266	7
46	Montreal, Que.	423	376,635	6,921	160	101,528	975	466	430,700	8,986	142	47,809	692
47	Morrisburg, Ont.	1	42	10				277	26,325	1,810			
48	Napanee, Ont.	14	1,127	72	6	858	30						
49	Niagara, Ont.	533	509,004	27,700									
50	Ottawa, Ont.	5	560	45	16	1,694	32						
51	Owen Sound, Ont.	338	179,526	7,553	1	348	5	12	15,998	260			
52	Parry Sound, Ont.							15	16,837	1,276			
53	Penetanguishene, Ont.	1	258	12				16	21,165	1,832			
54	Picton, Ont.				47	12,943	312						
55	Point Edward, Ont.	121	307,559	5,159	15	2,880	57	123	112,034	2,126	4	2,108	36
56	Port Arthur, Ont.	89	213,044	1,722	4	7,312	34	566	1,148,723	12,486	71	47,361	557
57	Port Burwell, Ont.	35	1,056	206									
58	Port Colborne, Ont.	120	73,039	1,482	30	15,956	142	66	68,416	956	31	11,120	73
59	Port Dalhousie.	12	1,586	117	2	842	12	2	1,194	32	1	257	4
60	Port Dover, Ont.	88	2,277	359				22	646	96			
61	Port Hope, Ont.				2	640	12	3	459	18			
62	Port McNicoll, Ont.	1	258	12				36	84,546	868	2	896	14
63	Port Stanley, Ont.	5	189	30				34	32,095	2,310			
64	Prescott, Ont.	45	19,106	1,166	3	1,874	16	271	202,961	4,391	5	2,288	28
65	Quebec, Que.	103	123,400	1,545	42	39,700	290	23	44,271	580	377	38,454	780
66	Queenston, Ont.	689	544,298	36,781									
67	Rainy River, Ont.	15	369	63				20	240	60			
68	Rimouski, Que.	7	6,186	114									
69	Rockport, Ont.	14	1,288	70				21	442	55	1	41	2
70	Rondeau, Ont.							155	148,276	4,507			
71	Sandwich, Ont.	103	62,851	1,045				469	137,298	4,714	13	4,355	58
72	Sarnia, Ont.	5,093	635,552	32,847	38	18,370	173	13,311	1,471,531	97,471	107	65,989	641
73	Sault Ste. Marie, Ont.	766	190,842	6,796	10	4,204	66	445	630,380	6,176	38	27,892	261
74	Smith's Falls, Ont.	41	3,185	246									
75	Sorel, Que.	8	4,062	106	3	2,289	15	2	125	20	165	19,948	356
76	Stickeen, B.C.	10	835	63				41	620	168			
77	St. Johns, Que.	1	40	5	49	5,912	143	60	4,250	469	237	24,274	492
78	Thessalon, Ont.	6	989	47	2	901	12	46	16,569	617	30	17,837	215
79	Thorold, Ont.							2	1,200	28			
80	Three Rivers, Que.	2	314	21	6	758	12				274	28,495	548
81	Toronto, Ont.	940	834,250	47,001	5	2,995	29	32	25,173	538			
82	Trenton, Ont.	18	16,200	90									
83	Valleyfield, Que.	2	372	17									

No. 16.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes, etc.—*Concluded.*

VESSELS ARRIVED.

Number.	Ports and Outports.	Canadian.						United States.					
		Steam.			Sail.			Steam.			Sail.		
		Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.
84	Walkerville, Ont.	5	4,259	69				98	25,430	1,378	23	8,529	184
85	Wallaceburg, Ont.	13	757	46				504	177,170	15,995	12	2,961	69
86	Welland, Ont.							54	71,284	852	13	22,829	124
87	Wellington, Ont.							1	177	9			
88	West Dock, Ont.	96	12,112	658	11	594	48	1,425	361,955	14,645			
89	Whitby, Ont.							2	318	19			
90	White Horse, Y. T.							5	2,041	129	4	1,342	4
91	Wiarton, Ont.	122	26,034	1,349	10	3,056	52						
92	Windsor, Ont.	83	66,602	1,536	1	315	6	149	39,999	1,777	21	1,606	112
93	Wolfe Island, Ont.	17	219	33	3	37	5	123	10,362	1,825			
	Total	13,026	7,697,451	239,914	875	341,931	4,387	25,788	9,617,072	275,494	2,139	622,010	7,693

No. 16.—SUMMARY STATEMENT of Canadian and United States Vessels trading on Inland Waters, which arrived at Canadian ports during the Fiscal Year ended March 31, 1917.

RECAPITULATION.

—	Number of Vessels.	Tons Register.	Number of Crew.
Canadian—Steam	13,026	7,697 451	239,914
Sail	875	341 931	4,387
United States—Steam	25,788	9,617 072	275,494
Sail	2,139	622,010	7,693
Total	41,828	18,278,464	527,488

DESCRIPTION OF VESSELS.

Description.	Number of Vessels.	Tons Register.
Steam—Screw	36,200	15,380,387
Paddle	2,562	1,909,753
Sternwheel	52	24,383
Sail—Schooners	781	345,926
Sloops	18	3,166
Barges	2,215	614,849
Total	41,828	18,278,464

No. 17.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage) which Departed from each Port and Outport during the Fiscal Year ended March 31, 1917.

VESSELS DEPARTED.

Number.	Ports and Outports.	CANADIAN.						UNITED STATES.					
		Steam.			Sail.			Steam.			Sail.		
		Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.
1	Amherstburg, Ont.	50	3,339	221	5	102	7	735	228,373	13,339	31	15,525	219
2	Bath, Ont.	6	72	12	7	1,173	34	.....	.....	.....	.....	.....	.....
3	Belleville, Ont.	2	976	20	48	9,287	246	.....	.....	.....	.....	.....	.....
4	Blind River, Ont.	17	4,133	180	9	3,305	55	55	21,686	826	34	17,676	227
5	Bowmanville, Ont.	.....	.....	.....	4	1,304	24	.....	.....	.....	.....	.....	.....
6	Bridgeburg, Ont.	.....	.....	.....	.....	.....	.....	119	6,219	486	247	79,970	633
7	Brockville, Ont	93	153,684	7,986	3	2,271	18	627	101,410	7,983	32	10,217	177
8	Bruce Mines, Ont.	83	2,942	486	4	600	20	44	6,675	376	1	1,077	10
9	Byng Inlet, Ont.	6	12,222	120	.....	.....	.....	55	820,117	1,284	3	1,742	24
10	Cardinal, Ont.	51	8,415	510	.....	.....	.....	143	14,054	1,026	.....	.....	.....
11	Chatham, Ont.	83	25,059	1,494	.....	.....	.....	11	718	88	8	2,528	60
12	Chicoutimi, Que.	3	3,083	54	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	Chippawa, Ont.	.....	.....	.....	.....	.....	.....	2	113	5	3	270	6
14	Clarenceville, Que.	.....	.....	.....	.....	.....	.....	1	119	9	.....	.....	.....
15	Cobourg, Ont.	626	2,053,936	22,934	4	889	23	.....	.....	.....	.....	.....	.....
16	Cockburn Island, Ont.	8	197	48	.....	.....	.....	12	1,428	97	11	2,218	48
17	Collingwood, Ont.	4	4,949	65	.....	.....	.....	9	10,073	177	.....	.....	.....
18	Cornwall, Ont.	1	9	9	.....	.....	.....	145	6,477	579	.....	.....	.....
19	Courtright, Ont.	1	48	7	1	230	4	1,543	246,822	18,498	.....	.....	.....
20	Cutler, Ont.	30	7,403	253	1	312	6	43	17,874	638	53	28,017	356
21	Dawson, Y.T.	13	1,944	103	9	1,710	18	24	11,552	700	20	7,866	40
22	Depot Harbour, Ont.	2	9,201	48	.....	.....	.....	90	214,288	1,248	.....	.....	.....
23	Deseronto, Ont.	6	3,481	108	17	1,978	42	17	14,476	343	.....	.....	.....
24	Ellis Bay, Que.	8	8,146	153	.....	.....	.....	4	4,272	92	.....	.....	.....
25	Forty Mile, Y.T.	9	1,932	96	9	1,754	9	26	11,973	675	19	7,387	20
26	Fort Frances, Ont.	43	852	177	.....	.....	.....	.....	.....	.....	.....	.....	.....

27	Fort William, Ont.	65	144,154	1,284	2	3,674	17	871	2,218,144	22,687	19	38,957	154
28	Gananoque, Ont.	668	5,289	1,007	10	2,350	50	1,395	24,375	4,591	3	612	12
29	Georgeville, Que.	1	55	4									
30	Goderich, Ont.	116	162,249	2,165	1	1,951	8	13	7,129	435			
31	Gore Bay, Ont.							1	1,541	24	1	474	8
32	Hamilton, Ont.	8	6,145	283									
33	Iroquois, Ont.							91	9,095	631			
34	Kenora, Ont.	26	383	98				18	360	105			
35	Key Harbour, Ont.	15	23,397	270				8	9,295	162	4	5,490	31
36	Kincardine, Ont.	3	75	12	2	324	11	8	2,114	110	1	268	7
37	Kingston, Ont.	791	458,745	26,365	287	81,832	1,333	334	30,490	4,112	6	2,383	35
38	Kingsville, Ont.	4	470	25				8	929	44			
39	Leamington, Ont.							2	169	17	1	527	8
40	Lévis, Que.	12	9,836	194	1	125	2				141	14,160	284
41	Little Current, Ont.	7	2,238	85	5	1,722	31	43	38,323	842	15	7,296	102
42	Magog, Que.	1	55	4									
43	Meaford, Ont.							5	2,135	69	6	1,440	41
44	Michipicoten Harbour, Ont.	26	53,500	508				23	37,587	440	5	10,966	41
45	Midland, Ont.	19	29,237	340				69	146,258	1,603	1	266	7
46	Montreal, Que.	436	390,633	7,170	121	78,316	764	434	386,375	8,182	133	36,678	526
47	Morrisburg, Ont.							279	28,388	1,993			
48	Murray Bay, Que.	16	13,000	259	3	2,408	18						
49	Napanee, Ont.	14	1,127	70	3	429	14						
50	Niagara, Ont.	453	328,558	24,715									
51	Ottawa, Ont.	25	3,250	245							163	16,767	264
52	Owen Sound, Ont.	303	99,663	4,952	1	348	5	12	15,998	260			
53	Parry Sound, Ont.							15	16,837	1,274			
54	Penetanguishene, Ont.	2	498	22				16	21,165	1,832			
55	Pieton, Ont.				38	10,037	274						
56	Point Edward, Ont.	68	186,431	1,886	13	1,398	44	104	108,646	1,572	4	2,108	36
57	Port Arthur, Ont.	90	236,947	5,674	4	7,312	34	575	1,165,273	13,524	71	47,361	557
58	Port Burwell, Ont.	37	1,060	207									
59	Port Colborne, Ont.	211	312,131	3,181	43	27,058	221	74	77,072	1,036	34	18,767	102
60	Port Dalhousie, Ont.	21	5,226	217	9	3,742	53	1	712	17			
61	Port Dover, Ont.	87	2,259	358				22	646	94			
62	Port Hope, Ont.				3	850	16	3	459	27			
63	Port McNicoll, Ont.	17	38,015	337				29	56,048	668	2	896	14
64	Port Stanley, Ont.	5	182	29				42	37,576	2,783			
65	Prescott, Ont.	54	16,995	1,092	26	15,144	133	287	208,160	4,411	11	5,354	65
66	Quebec, Que.	110	99,348	1,693	52	38,480	416	8	4,268	128	267	26,740	540
67	Queenston, Ont.	758	719,111	39,166									
68	Rainy River, Ont.	19	488	81				23	276	69			
69	Rimouski, Que.	7	6,186	114									
70	Rockport, Ont.	9	828	45				20	488	61			
71	Rondeau, Ont.							154	147,273	4,524			
72	Sandwich, Ont.	99	68,045	1,038				469	159,512	4,781	13	3,720	45
73	Sarnia, Ont.	5,073	593,079	30,936	35	15,926	151	13,311	1,462,875	96,522	113	68,158	668
74	Sault Ste. Marie, Ont.	734	170,984	6,639	12	4,947	79	445	630,380	6,176	38	27,892	261
75	Smith's Falls, Ont.	38	1,963	228									
76	Sorel, Que.	9	5,781	130	2	1,328	10	2	1,363	27	156	16,341	312

No 17.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes, etc.—*Concluded.*

VESSELS DEPARTED.

Number.	Ports and Outports.	CANADIAN.						UNITED STATES.					
		Steam.			Sail.			Steam.			Sail.		
		Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.
77	Stickeen, B.C	11	838	61				40	592	151			
78	St. Johns, Que	2	83	7	51	6,489	147	57	4,133	457	910	91,928	1,870
79	Thessalon, Ont	11	689	53	8	3,531	43	46	16,569	617	30	17,837	215
80	Thorold, Ont	19	16,560	328				2	844	22			
81	Three Rivers, Que	2	314	21	10	1,225	22				277	28,713	554
82	Toronto, Ont	942	836,413	44,656	7	1,603	35	33	26,947	575			
83	Trenton, Ont	14	3,600	30									
84	Walkerville, Ont	1	1,357	19				98	22,743	1,360	23	7,916	179
85	Wallaceburg, Ont	5	623	41				504	176,328	15,982	17	3,593	89
86	Welland, Ont	21	20,348	344	1	538	6	50	98,283	969	14	24,382	122
87	Wellington, Ont							1	177	9			
88	West Dock, Ont	97	12,405	671	12	648	50	1,428	362,393	14,651			
89	Whitby, Ont							2	318	19			
90	White Horse, Y.T							5	2,019	128	6	1,673	6
91	Wiarton, Ont	122	26,034	1,349	12	3,646	62						
92	Windsor, Ont	87	142,114	4,595				149	32,255	1,630	21	5,042	102
93	Wolfe Island, Ont	5	109	10				121	10,332	1,803			
	Total	12,941	7,565,126	250,397	895	342,296	4,555	25,455	9,550,386	272,675	2,968	709,198	9,077

No. 17.—SUMMARY STATEMENT of Canadian and United States Vessels, trading on Inland Waters, which *departed* from Canadian Ports during the Fiscal Year ended March 31, 1917.

RECAPITULATION.

	Number of Vessels.	Tons Register.	Number of Crew.
Canadian—Steam	12,941	7,565,126	250,397
Sail	895	342,296	4,555
United States—Steam	25,455	9,550,386	272,675
Sail	2,968	709,198	9,077
Total	42,259	18,167,006	536,704

DESCRIPTION OF VESSELS.

Description.	Number of Vessels.	Tons Register.
Steam—Screw	35,764	15,205,108
Paddle	2,560	1,880,122
Sternwheel	72	30,282
Sail—Schooners	938	371,549
Sloops	4	75
Barges	2,921	679,870
Total	42,259	18,167,006

No. 18.—STATEMENT showing the Description, Number and Tonnage of Canadian and United States Vessels trading on the Rivers and Lakes between Canada and the United States (exclusive of Ferriage), which Arrived and Departed during the Fiscal Year ended March 31, 1917.

	Canadian.			United States.			Total.		
	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.	Number of Vessels.	Tons Register.	Number of Crew.
Arrived	13,901	8,039,382	244,301	27,927	10,239,082	283,187	41,828	18,278,464	527,488
Departed	13,836	7,907,422	254,952	28,423	10,259,584	281,752	42,259	18,167,006	536,704
Total	27,737	15,946,804	499,253	56,350	20,498,666	564,939	84,087	36,445,470	1,064,192

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade of the Dominion of Canada, which arrived at, or departed from, the undermentioned Ports and Outports, during the Fiscal Year ended March 31, 1917.

STEAMERS.

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.			Foreign.			British.			Foreign.		
	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.
Albert, N.B.	40	1,830	238				40	1,830	238			
Alert Bay, B.C.	662	444,384	23,933				662	444,384	23,933			
Amherst, N.S.	1	46	6				1	46	6			
Amherstburg, Ont.	92	18,284	859				27	2,085	139			
Annapolis Royal, N.S.	111	6,023	767				111	6,030	767			
Antigonish, N.S.	43	3,001	429				43	3,001	429			
Anyox, B.C.	328	224,187	10,588				329	220,170	9,705			
Arichat, N.S.	651	57,327	5,460				649	58,139	5,677			
Baddeck, N.S.	256	68,825	10,479	1	46	6	252	68,862	10,633			
Barrington Passage, N.S.	674	34,203	5,409	22	416	86	674	34,203	5,409	22	416	86
Barton, N.S.	1	48	3				1	48	3			
Bath, Ont.	419	33,661	3,086				60	720	120			
Bathurst, N.B.	12	3,553	95				12	766	77			
Bear River, N.S.	42	2,756	285				43	2,883	286			
Belliveau's Cove, N.S.	3	56	8				3	56	8			
Belleville, Ont.	54	30,537	1,459				5	1,185	54			
Blind River, Ont.	123	46,497	2,602				6	905	46			
Bowmanville, Ont.	1	28	6				1	28	6			
Bridgetown, N.S.	37	2,072	222				37	2,072	222			
Bridgewater, N.S.	49	3,035	279				49	3,035	279			
Brockville, Ont.	246	239,433	10,833				122	161,093	8,099			
Bruce Mines, Ont.	287	80,668	4,290				39	14,482	702			
Buctouche, N.B.	2	34	6				4	72	11			
Byng Inlet, Ont.	34	7,155	382				55	40,514	745			
Campbellton, N.B.	34	20,089	594	2	3,916	51	28	4,368	376			
Campo Bello, N.B.	179	30,291	333	1	519	39	181	29,215	1,686	3	59	6
Canning, N.S.	30	2,160	210				30	2,160	210			
Canso, N.S.	1,153	161,192	12,097	3	60	10	1,158	161,771	12,207			
Carcross, Y.T.	56	8,344	896				55	8,195	880			
Cardigan, P.E.I.	30	2,940	420				30	2,940	402			
Charlottetown, P.E.I.	285	99,768	4,265				304	99,306	4,449			
Chatham, N.B.	57	17,842	497	18	17,492	487	50	7,169	320			
Chatham, Ont.	80	19,958	1,133				16	835	96			
Chemainus, B.C.	308	38,621	2,786				293	24,775	2,676			

Chester, N.S.				5	65	15	1	10	4	1	10	3
Cheticamp, N.S.	79	6,322	881				79	6,328	832			
Chicoutimi, Que.	104	125,995	5,169	4	4,767	95	102	118,862	5,089			
Church Point, N.S.	14	154	27				14	168	27			
Clark's Harbour, N.S.	417	21,723	3,339				417	21,723	3,339			
Clementsport, N.S.	2	140	14				2	140	14			
Cobourg, Ont.	6	5,711	147				7	4,266	120			
Cockburn Island, Ont.	158	36,718	2,590				27	2,691	196			
Collingwood, Ont.	105	63,421	1,907				100	53,130	1,777			
Cornwall, Ont.	163	91,910	2,354				56	14,748	479			
Courtright, Ont.	62	77,884	1,308				51	63,746	1,068			
Crapaud, P.E.I.	54	11,718	486				55	11,935	495			
Cutler, Ont.	346	57,611	2,938				331	48,412	2,522			
Dalhousie, N.B.	6	10,446	136	5	4,880	114				1	1,219	26
Dawson, Y.T.	94	43,337	1,932				90	42,230	1,917			
Depot Harbour, Ont.	33	63,531	670				32	61,149	624			
Deseronto, Ont.							2	1,542	36			
Digby, N.S.	546	208,199	12,083	11	126	25	450	213,869	12,583	1	2	4
Dunnville, Ont.	39	6,202	356				39	6,202	356			
Ellis Bay, Que.	37	18,409	658	4	4,272	80	30	10,815	511			
Esquimaux Point, Que.	63	37,614	1,797				63	37,614	1,797			
Forty Mile, Y.T.	6	2,220	96				10	2,239	106			
Fort William, Ont.	974	1,873,488	31,188				1,067	2,163,281	37,015			
Freeport, N.S.	16	1,099	186				16	1,136	160			
Gananoque, Ont.	277	61,470	3,412				31	2,598	146			
Gaspé, Que.	39	11,613	738				39	11,613	738			
Georgetown, P.E.I.	174	16,764	2,376				176	16,912	2,378			
Glace Bay, N.S.	9	861	89				9	861	89			
Goderich, Ont.	121	173,636	2,294	13	7,129	435	116	162,749	2,165	13	7,129	435
Gore Bay, Ont.	380	90,742	5,480				242	41,026	2,110			
Grand Narrows, N.S.	20	1,962	174				20	1,962	174			
Guysboro, N.S.	319	33,106	2,868				319	33,181	2,870			
Halifax, N.S.	1,259	535,544	20,544	9	1,816	184	1,251	413,099	16,869	7	9,859	215
Hamilton, Ont.	617	309,560	16,334				546	245,920	16,279			
Hantsport, N.S.	40	1,665	257				43	1,758	267	1	331	24
Hillsboro, N.B.	11	121	59				11	121	59			
Indian Island, N.B.	1	5	1				1	5	1	11	124	22
Inverness, N.S.	4	316	40				4	316	40			
Iona, N.S.	243	21,618	1,269				243	21,618	1,269			
Isaac's Harbour, N.S.	120	28,338	1,557				118	28,058	1,538			
Joggins Mines, N.S.	41	1,904	246				41	1,904	246			
Kaslo, B.C.	346	178,802	7,037				346	179,290	7,027			
Kenora, Ont.	5	218	28				9	321	41			
Kentville, N.S.	100	5,111	700				88	4,499	616			
Key Harbour, Ont.	1	1,089	18				1	1,452	18			
Kincardine, Ont.	3	75	16	8	2,114	110	3	75	12	8	2,114	110
Kingsport, N.S.	16	1,440	112				15	673	87			
Kingston, Ont.	748	209,051	9,938				552	97,502	4,795			
Kingsville, Ont.	164	38,916	1,767				157	37,403	1,704			
Ladner, B.C.	174	16,262	1,360				173	16,128	1,358			

No. 19.—Statement of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

STEAMERS—*Continued.*

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.			Foreign.			British.			Foreign.		
	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.
Ladysmith, B.C.	1,198	182,242	14,035				1,216	187,556	13,174			
LaHave, N.S.	154	8,159	1,007				151	7,927	954			
Leamington, Ont.	82	19,926	902									
Levis, Que.	13	12,678	313									
Little Current, Ont.	217	128,743	7,527				101	55,897	1,539			
Liverpool, N.S.	268	10,063	1,200	19	2,289	107	266	9,831	1,181	17	2,399	68
Lockeport, N.S.	46	1,652	240				43	1,526	216			
Lord's Cove, N.B.	107	4,355	507				125	4,418	550	4	79	8
Louisburg, N.S.	383	248,497	5,809	28	46,006	673	357	189,268	4,799	22	27,709	496
Lower East Pubnico, N.S.	159	10,741	1,324				158	10,629	1,299			
Lunenburg, N.S.	199	9,423	1,076				209	9,573	989			
Mabou, N.S.	20	1,620	240				20	1,620	240			
Magdalen Islands, Que.	49	7,075	815				44	6,433	752			
Mahone Bay, N.S.	53	3,071	274				52	2,949	127			
Margaree, N.S.	94	7,463	977				95	7,532	988			
Margaretsville, N.S.	96	4,803	674				96	4,803	674			
Meaford, Ont.	91	38,439	1,795				91	38,439	1,795			
Meteghan River, N.S.	3	71	13				3	71	13			
Michipicoten Harbour, Ont.	39	64,039	744				23	29,444	435			
Middleton, N.S.	59	2,989	413				59	2,989	413			
Midland, Ont.	199	296,286	3,470				199	296,113	3,443			
Moncton, N.B.	109	7,693	665				106	4,651	532			
Montague Bridge, P.E.I.	91	8,678	1,224				87	8,334	1,156			
Montmagny, Que.	2	4,001	47				2	4,001	46			
Montreal, Que.	4,245	1,790,960	84,701				4,212	1,763,658	83,866			
Murray Bay, Que.	16	13,000	259									
Murray Harbour, P.E.I.	26	2,548	364				27	2,573	358			
Nanaimo, B.C.	2,804	371,220	40,234	34	1,073	319	2,778	621,624	40,855	33	1,823	320
Napanee, Ont.	3	199	23				3	230	25			
Nelson, B.C.	1,088	517,567	19,348				1,088	538,597	19,212			
Newcastle, N.B.	4	10,162	115	6	8,143	121	1	2,777	29			
Newport, B.C.	602	215,148	10,041				567	200,797	9,613			
New Campbellton, N.S.	2	215	20	1	1,472	21	2	215	20			
New Westminster, B.C.	790	36,484	5,106				808	37,992	5,216			
Niagara, Ont.	978	830,515	51,980				1,023	991,561	51,035			

North East Harbour, N.S.	87	4,742	742				88	4,824	749				
North Head, N.B.	77	7,413	449				91	8,792	534	6	98	18	
North Sydney, N.S.	303	107,975	4,158	35	24,980	844	294	73,317	3,670	27	17,510	584	
Ocean Falls, B.C.	416	221,056	12,847				428	224,882	13,107				
Ottawa, Ont.	125	11,101	1,255				128	10,461	1,238				
Owen Sound, Ont.	338	179,526	7,553				303	99,663	4,952				
Parrsboro, N.S.	153	20,103	1,074				134	19,016	816				
Parry Sound, Ont.	116	26,225	2,243				119	26,887	2,314				
Paspebiac, Que.	72	17,885	1,160	1	657	16	70	16,013	1,235				
Penetanguishene, Ont.	97	22,312	2,065				96	22,072	2,055				
Perce, Que.	59	23,163	1,260	1	1,203	20	59	23,163	1,269	1	1,203	20	
Picton, Ont.	423	108,058	7,501				220	40,552	3,312				
Pictou, N.S.	210	38,998	3,042	1	1,493	24	205	33,954	2,963				
Point Edward, Ont.	248	264,892	8,595				318	375,945	11,836				
Port Alberni, B.C.	91	37,867	2,777				94	37,680	2,765				
Port Arthur, Ont.	548	1,207,802	29,741				548	1,207,802	29,741				
Port Burwell, Ont.	209	7,534	1,260				220	8,040	1,340				
Port Clyde, N.S.	95	4,917	795				93	4,789	756				
Port Colborne, Ont.	274	418,690	4,766	1	3,049	25	164	167,270	2,712				
Port Dalhousie, Ont.	609	323,726	12,176				597	315,653	11,872				
Port Dover, Ont.	18	537	116				18	537	108				
Port Elgin, N.B.							1	31	5				
Port George, N.S.	65	3,239	448				65	3,239	448				
Port Hawkesbury, N.S.	255	58,390	2,672	2	2,018	37	262	59,436	3,015	3	1,297	36	
Port Hastings, N.S.	123	10,882	1,233	4	2,210	69	128	14,296	1,304				
Port Hood, N.S.	222	16,158	2,231				222	15,969	2,231				
Port Hope, Ont.	4	1,706	45				4	1,706	45				
Port La Tour, N.S.	106	5,848	877				106	5,848	877				
Port Morien, N.S.	24	2,534	242				24	2,534	242				
Port Mulgrave, N.S.	1,012	91,685	8,827	5	4,670	119	1,014	112,437	8,876	3	112	12	
Port McNicoll, Ont.	376	815,303	12,358				352	755,602	11,822				
Port Simpson, B.C.	268	182,703	9,705				267	181,237	9,660				
Port Stanley, Ont.	250	14,750	1,538				248	13,643	1,517				
Port Williams, N.S.	30	1,380	210				30	1,380	210				
Powell River, B.C.	1,355	394,806	29,193				1,353	395,863	29,260				
Prescott, Ont.	259	315,340	14,771				208	261,339	15,730				
Prince Rupert, B.C.	1,156	555,392	29,694				1,211	598,728	31,640				
Quebec, Que.	657	538,627	30,507	27	30,340	480	957	1,276,433	44,231	24	22,809	560	
Queenston, Ont.	296	341,432	14,711				227	159,917	12,316				
Rainy River, Ont.	7	280	34				4	178	24				
Richibucto N.B.	47	2,165	228				51	2,214	240				
River Hebert, N.S.	25	1,150	148				25	1,150	150				
Riviere du Loup, Que.	14	1,335	560				15	13,418	566				
Rockport, Ont.	67	12,509	899				23	2,046	114				
Rondeau, Ont.	59	1,968	380				60	2,005	387				
Sandy Point, N.S.	31	1,046	254	1	219	21	29	990	230				
Sandwich, Ont.	3	228	15				2	2,544	28				
Sandy Cove, N.S.	38	1,644	262	2	12	4	34	1,060	296	1	6	2	
Sarnia, Ont.	261	435,047	12,638				288	460,309	13,624				
Sault Ste. Marie, Ont.	2,161	1,639,820	55,456				785	764,525	24,085				

No. 19.—STATEMENT of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

STEAMERS—*Continued.*

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.			Foreign.			British.			Foreign.		
	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.
Sherbrooke, N.S.	46	4,406	433				46	4,406	432			
Shediac, N.B.	73	13,684	681	1	760	16	73	13,342	684			
Sheet Harbour, N.S.	171	31,206	2,375				174	31,468	2,427			
Shelburne, N.S.	17	599	92	4	582	43	17	599	92	1	24	3
Shippegan, N.B.	23	660	93				28	729	108			
Sidney, B.C.	438	50,231	5,004				453	52,826	5,133			
Smith's Falls, Ont.	24	3,768	336				24	3,768	336			
Sorel, Que.	645	930,546	33,222				648	932,506	33,254			
Souris, P.E.I.	103	14,991	1,740				108	15,090	1,751			
Steveston, B.C.	515	28,042	3,045				565	31,244	3,701			
Stewart, B.C.	54	13,118	658				52	13,116	656			
St. Andrews, N.B.	354	20,094	1,465	4	217	18	396	21,875	2,079	6	306	41
St. George, N.B.	43	4,339	338				39	2,468	308			
St. John, N.B.	1,213	398,523	19,959				1,269	575,301	23,617			
St. Johns, Que.	1	17	4				1	17	4			
St. Martins, N.B.	23	830	111	4	316	44	24	886	118			
St. Peters, N.S.	76	7,993	914				77	8,027	920			
St. Stephen, N.B.	250	12,954	900				257	12,017	881	10	3,104	54
Summerside, P.E.I.	38	32,535	1,340				24	28,440	1,046			
Sydney, N.S.	785	942,172	19,388	90	118,207	2,292	840	1,145,313	22,665	26	18,501	574
Thessalon, Ont.	277	90,859	5,259				160	50,247	2,475			
Three Rivers, Que.	521	905,153	22,953				522	905,272	22,960			
Thorold, Ont.	24	20,730	409				18	15,552	303			
Toronto, Ont.	1,409	708,226	33,519				1,319	621,130	31,756			
Truro, N.S.	28	2,016	212				28	2,016	212			
Union Bay, B.C.	998	224,260	15,772				1,000	221,704	15,752			
Valleyfield, Que.	2	372	17				2	372	17			
Vancouver, B.C.	9,395	2,927,760	173,573				9,665	3,197,348	175,476			
Victoria, B.C.	3,567	2,017,637	94,521				3,604	1,749,506	94,684			
Walkerville, Ont.	34	8,703	229				34	9,049	291			
Wallace, N.S.	33	2,757	443				32	2,774	429			
Wallaceburg, Ont.	22	1,041	125				28	1,084	132			
Welland, Ont.	21	30,057	370				3	3,112	52			
Wellington, Ont.	1	50	3				1	50	3			
West Dock, Ont.	185	44,955	2,035				185	44,955	2,035			

Westport, N.S.	180	12,082	1,658	11	109	25	249	15,627	2,147	6	92	7
Weymouth, N.S.	315	8,880	1,057				317	10,253	1,054	1	8	3
Whitby, Ont.	3	891	50				3	891	50			
White House, Y.T.	86	41,501	1,828				87	41,949	1,830			
White Rock, B.C.	35	1,605	192				35	1,035	145			
Wiarton, Ont.	122	26,034	1,349				122	26,034	1,349			
Windsor, N.S.	102	9,667	692				93	4,877	600			
Windsor, Ont.	217	209,279	6,494				153	70,315	1,872			
Wolfe Island, Ont.	1	98	7				1	98	7			
Wolfville, N.S.	31	1,431	217				31	1,420	213			
Yarmouth, N.S.	381	29,474	2,667	3	2,240	67	434	31,499	3,079	1	49	5
Total	65,846	29,433,729	1,304,873	391	299,883	7,142	62,500	28,411,647	1,242,047	260	118,383	3,742

SAILING VESSELS.

Albert, N.B.	10	1,140	36	4	531	14	7	678	22	7	993	30
Alberton, P.E.I.	33	1,903	120				32	1,894	123			
Amherst, N.S.	12	376	32	2	1,597	25	15	816	42			
Amherstburg, Ont.	5	981	16				5	981	16			
Annopolis Royal, N.S.	51	2,031	153	2	69	5	54	2,291	167	2	69	5
Antigonish, N.S.	94	2,779	224				94	2,779	224			
Anyox	62	53,176	193				58	51,192	165			
Arichat	280	10,358	829	1	199	5	276	10,503	842			
Baddeck, N.S.	236	10,007	849	53	5,527	556	219	8,865	700	79	10,247	856
Barrington Passage, N.S.	36	1,983	139				36	1,983	139			
Barton, N.S.	17	878	56				21	1,190	69	1	92	3
Bath, Ont.	3	616	14				4	707	18			
Bathurst, N.B.	53	1,302	178	6	2,548	53	54	1,481	191			
Bear River, N.S.	10	1,626	47				1	30	4			
Belliveaus Cove, N.S.	90	2,747	204				90	2,563	210			
Belleville, Ont.	1	42	2				2	241	7			
Blind River, Ont.	6	1,428	37				4	712	23			
Birdgetown, N.S.							3	352	12			
Bridgewater, N.S.	35	5,888	151				13	1,247	55			
Brockville, Ont.	2	962	8				2	962	8			
Buctouche, N.B.	47	2,487	142				45	2,381	135			
Campbellton, N.B.	44	22,726	399	20	3,621	127	22	1,668	88			
Campo Bello, N.B.	2	135	8				1	67	4			
Canning, N.S.	13	1,158	42				13	993	38			
Canso, N.S.	394	17,171	1,416	8	1,122	77	394	18,113	1,390	6	651	34
Caraquet, N.B.	58	2,844	223				58	2,844	223			
Cardigan, P.E.I.	19	1,560	81				11	885	43			
Carcross, Y.T.	8	224	16				8	224	16			
Chandler, Que.	3	201	20	2	134	13	2	160	13	1	54	5
Charlottetown, P.E.I.	553	37,662	1,671				547	38,680	1,654			
Chatham, N.B.	143	12,484	666	7	2,885	60	127	7,793	446			

No. 19.—Statement of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

SAILING VESSELS—*Continued.*

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.			Foreign.			British.			Foreign.		
	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.
Chatham, Ont	16	3,470	75				15	3,282	70			
Chemainus, B.C	30	12,159	83				33	13,293	92			
Chester, N.S	208	9,270	710	1	30	4	221	9,472	750			
Cheticamp, N.S	43	1,148	156				44	1,053	165			
Chicoutimi, Que	3	260	9	1	268	6	1	98	4			
Church Point, N.S	17	847	40	1	6	2	14	688	30	1	6	2
Clark's Harbour, N.S	91	3,733	269				91	3,733	269			
Clementsport, N.S	5	469	20				4	327	13			
Cockburn Island, Ont	2	254	10				2	254	10			
Courtright, Ont	6	1,380	24				6	1,380	24			
Crapaud, P.E.I	27	2,182	95				28	2,281	97			
Cutler, Ont	7	1,696	39				7	1,687	39			
Dalhousie, N.B	16	1,276	65	5	1,954	41				35	21,604	372
Dawson, Y.T	58	10,115	116				58	10,212	116	3	864	6
Deseronto, Ont	6	496	20				1	21	1			
Digby, N.S	160	8,044	635	1	63	7	167	6,294	592	2	124	20
Dorchester, N.B	3	680	16				3	317	10			
Ellis Bay, Que	8	73	25				8	73	25			
Esquimaux Point, Que	82	3,375	338				82	3,375	338			
Fort William, Ont	20	35,852	169				15	27,795	128			
Freeport, N.S	32	1,043	101				73	2,448	215			
Gananoque, Ont	2	36	5				5	90	15			
Gaspe, Que	88	22,822	692				68	10,572	453			
Georgetown, Que	79	4,174	227				81	4,277	239			
Glace Bay, N.S	140	6,834	361	4	62	30	158	7,591	457	4	62	30
Goderich, Ont	1	1,951	8				1	1,951	8			
Gore Bay, Ont	1	348	5									
Grand Narrows, N.S	2	117	6				2	117	6			
Guysboro, N.S	37	1,743	106				33	1,458	91			
Halifax, N.S	2,278	151,064	9,048	10	4,141	77	2,154	144,396	7,560	59	19,957	362
Hantsport, N.S	15	1,549	44	6	1,312	31	17	2,501	52	5	825	20
Hillsboro, N.B	25	3,514	61	3	1,395	21	23	614	51			
Iona, N.S	3	126	7				3	126	7			
Isaac's Harbour, N.S	31	2,134	124				33	2,347	133			
Joggins Mines, N.S	17	1,732	51	1	157	6	5	176	11			

Kentville, N.S	36	880	86				37	1,107	92				
Kincardine, Ont	1	127	5				3	592	18				
Kingspoint, N.S	43	2,175	103				40	1,660	94				
Kingston, Ont	237	154,267	1,536				180	102,802	1,110				
Ladysmith, B.C	449	377,261	2,185				449	377,261	2,185				
La Have, N.S	98	9,153	599				105	9,397	605	2	1,557	12	
Levis, Que				1	108	12							
Little Current, Ont	3	832	17				4	1,212	20				
Liverpool, N.S	70	8,168	335	21	6,625	128	30	2,886	155	8	939	42	
Lockeport, N.S	57	3,111	201	13	301	56	60	3,675	223	13	212	37	
Londonderry, N.S	12	685	35				12	685	35				
Lords' Cove, N.B	1	71	5				1	71	5				
Louisburg, N.S	268	82,182	1,125	3	829	20	257	79,425	1,040	5	374	65	
Lower East Pubnico, N.S	92	2,724	237	4	87	12	96	2,854	248	4	83	12	
Lunenburg, N.S	296	20,891	1,424	1	268	6	334	26,177	1,666	1	268	6	
Magdalen Islands, Que	107	6,126	547	32	2,628	472	146	8,483	1,137	17	1,628	362	
Mahone Bay, N.S	37	2,473	163				45	3,322	337				
Maitland, N.S	27	1,801	84				22	1,331	64				
Margaree, N.S	13	586	43				15	649	47				
Meteghan River, N.S	29	1,279	30	1	8	5	29	1,288	87	1	8	3	
Midland, Ont	8	13,918	70				8	13,918	70				
Moncton, N.B	47	2,853	139				56	3,531	177				
Montague Bridge, P.E.I	73	4,168	224				69	3,902	205				
Montreal, Que	998	331,820	4,228				1,010	360,538	4,367				
Murray Bay, Que	2	2,408	18										
Murray Harbour, P.E.I	69	2,227	163				68	2,156	162				
Nanaimo, B.C	36	29,210	126				36	29,210	126				
Napanee, Ont							4	572	20				
Newcastle, N.B	54	2,445	168	45	10,473	317	43	2,060	126				
Newport, B.C	105	81,374	422				103	79,717	412				
New Campbellton, N.S	15	592	45	-2	88	8	16	631	46				
New Glasgow, N.S	114	2,926	240				109	2,631	226				
New Westminster, B.C	148	74,971	482				146	74,110	457				
North East Harbour, N.S	5	224	20				4	191	12				
North Head, N.B	15	1,004	48				17	1,135	54				
North Sydney, N.S	380	25,869	2,380	8	889	92	671	44,425	3,685	19	10,122	147	
Ottawa, Ont	172	30,212	624	14	1,401	29	193	33,132	579				
Owen Sound, Ont	1	348	5				1	348	5				
Parrsboro', N.S	636	54,816	1,865				600	45,256	1,663				
Paspebiac, Que	77	4,570	340	4	513	23	74	4,032	327	10	2,214	69	
Penetanguishene, Ont	3	832	15				3	832	15				
Percé, Que	21	1,578	186	10	973	222	20	1,489	129	11	1,031	22	
Picton, Ont	4	972	26				9	2,906	67				
Pictou, N.S	478	28,335	1,339	3	735	18	480	28,359	1,337	1	452	6	
Point Edward, Ont	154	34,904	621				191	43,969	769				
Port Arthur, Ont	1	1,723	8				1	1,723	8				
Port Clyde, N.S	6	840	37				5	365	27				
Port Colborne, Ont	121	103,562	652				112	94,347	713				
Port Dalhousie, Ont	146	4,948	325				142	4,323	311				
Port Elgin, N.B	19	853	40				20	894	43	1	399	10	

No. 19.—Statement of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Concluded.*

SAILING VESSELS—*Continued.*

Ports and Outports.	Vessels Arrived.						Vessels Departed.					
	British.			Foreign.			British.			Foreign.		
	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.	Number of Vessels.	Tons Register.	Crew Number.
Port George, N.S.	4	92	10				4	92	10			
Port Hawkesbury, N.S.	163	14,269	674	15	2,556	80	169	13,641	648	10	1,385	60
Port Hastings, N.S.	298	15,470	880	1	257	16	294	15,152	866			
Port Hood, N.S.	23	783	102				23	794	98			
Port La Tour, N.S.	23	891	70				23	891	70			
Port Morien, N.S.	1	46	3				1	46	3			
Port Mulgrave, N.S.	54	2,517	184				55	2,620	184	1	54	5
Port Wade, N.S.	6	236	23	4	31	10	9	380	41	2	15	5
Port Williams, N.S.	10	710	31				13	1,226	43			
Powell River, B.C.	3	1,134	9				4	1,805	12			
Prescott, Ont.	6	2,795	28				2	819	12			
Prince Rupert, B.C.	43	9,659	146	4	54	10	43	10,792	158	4	54	10
Pugwash, N.S.	29	1,224	78	2	525	14	30	1,242	79			
Quebec, Que.	74	9,356	390				543	52,125	1,544	8	2,580	23
Richibucto, N.B.	55	2,457	168	1	297	8	61	2,801	188	2	397	13
River Hebert, N.S.	11	941	29				11	809	29			
River John, N.S.	1	13	2				1	13	2			
Riviere du Loup, Que.	1	97	3									
Sackville, N.B.	2	68	4				5	520	16			
Salmon River, N.S.	3	81	6				5	219	16			
Sandy Point, N.S.	21	2,632	101	5	1,414	31	12	1,161	52	4	890	24
Sandy Cove, N.S.	30	1,185	165	1	11	3	34	1,275	194			
Sarnia, Ont.	76	22,238	360				90	26,344	436			
Sault Ste. Marie, Ont.	11	3,248	74				9	2,317	58			
Sherbrooke, N.S.	16	1,819	65	2	752	10	14	1,088	57			
Shediac, N.B.	65	2,440	193				60	2,360	170			
Sheet Harbour, N.S.	22	901	76				24	945	70			
Shelburne, N.S.	40	2,657	159	4	4,329	37	40	2,933	144	2	166	29
Shippegan, N.B.	131	3,395	533	3	634	37	148	4,178	601	3	634	37
Sidney, B.C.	97	47,630	283				97	47,630	284			
Sorel, Que.	16	8,623	83				11	7,540	59			
Souris, P.E.I.	90	4,491	338				67	3,766	245			
St. Andrews, N.B.	40	2,239	141				44	2,322	145			
St. George, N.B.	5	92	10	8	2,720	46	11	262	25			
St. John, N.B.	841	37,995	2,242	23	4,791	99	880	53,079	2,290			

St. Martin's, N.B.	92	7,982	282				89	6,248	267				
St. Peters, N.S.	25	1,334	77				28	1,494	86				
St. Stephen, N.B.	17	1,003	50				18	1,048	50				
Summerside, P.E.I.	247	15,397	773	1	84	8	254	16,450	822	6	2,614	45	
Sydney, N.S.	625	56,777	2,716	2	41	18	298	29,669	1,138	1	75	18	
Tatamagouche, N.S.	5	106	10				5	106	10				
Three Rivers, Que.	18	3,528	49				19	3,718	48				
Tignish, P.E.I.	22	678	91				22	713	96				
Toronto, Ont.	86	4,324	206				89	4,995	227				
Truro, N.S.	173	13,428	522				173	13,428	522				
Tusket, N.S.				3	274	62	1	11	4	3	274	62	
Union Bay, B.C.	44	59,234	229				46	61,674	242				
Vancouver, B.C.	817	694,148	3,903				814	693,009	3,891				
Victoria, B.C.	109	92,432	549				106	89,008	502				
Walkerville, Ont.	25	5,750	100				25	5,750	100				
Wallace, N.S.	2	145	4				5	317	10				
Wallaceburg, Ont.	24	4,625	104				23	4,395	101				
Welland, Ont.	1	538	4										
Westport, N.S.	49	1,753	119	1	11	4	60	2,475	159	3	56	8	
Weymouth, N.S.	207	6,694	516	18	2,884	66	202	5,599	512	7	338	19	
Whitby, Ont.							1	57	2				
White House, Y.T.	46	8,351	46				47	8,523	47				
Wiarton, Ont.	10	3,056	52				12	3,646	62				
Windsor, N.S.	207	37,960	634	13	3,586	60	189	25,369	508	7	2,396	33	
Windsor, Ont.	66	15,180	266				66	13,335	266				
Wolfe Island, Ont.	1	18	3				1	18	3				
Wolfville, N.S.	60	2,563	172				69	3,764	207				
Yarmouth, N.S.	208	5,053	757	7	346	58	253	11,458	1,100	15	785	51	
Total	17,161	3,260,636	65,247	418	79,144	3,257	17,507	3,204,652	64,303	376	87,548	3,184	

No. 19.—Statement of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Continued.*

RECAPITULATION.

	Steamers.			Sailing Vessels.			Total.		
	Number of Vessels	Tonnage.	Crew Number.	Number of Vessels.	Tonnage.	Crew Number.	Number of Vessels.	Tonnage.	Crew Number.
Arrived—									
British	65,846	29,433,729	1,304,873	17,161	3,260,636	65,247	83,007	32,694,365	1,370,120
Foreign	391	299,883	7,142	418	79,144	3,257	809	379,027	10,399
Total	66,237	29,733,612	1,312,015	17,579	3,339,780	68,504	83,816	33,073,392	1,380,519
Departed—									
British	62,500	28,411,647	1,242,047	17,507	3,204,652	64,303	80,007	31,616,299	1,306,350
Foreign	260	118,383	3,742	376	87,548	3,184	636	205,931	6,926
Total	62,760	28,530,030	1,245,789	17,883	3,292,200	67,487	80,643	31,822,230	1,313,276

No. 19.—Statement of Vessels, British and Foreign, employed in the Coasting Trade, etc.—*Concluded.*

DESCRIPTION OF VESSELS.

	Arrived.		Departed.		Total.	
	Number of Vessels.	Tonnage.	Number of Vessels.	Tonnage.	Number of Vessels.	Tonnage.
Steamers—						
Screw	59,680	24,881,708	56,569	23,745,239	116,249	48,626,947
Paddle	5,057	4,091,234	4,703	4,005,904	9,760	8,097,138
Sternwheel	1,500	760,670	1,488	778,887	2,988	1,539,557
Total, steamers	66,237	29,733,612	62,760	28,530,030	128,997	58,263,642
Sailing vessels—						
Ships	38	22,006	26	14,478	64	36,484
Barques	932	781,548	934	787,368	1,866	1,568,916
Barquentines	10	3,529	11	3,413	21	6,942
Brigantines	1	144	2	397	3	541
Schooners	13,347	893,573	13,665	881,517	27,012	1,775,090
Sloops	359	29,390	385	24,877	744	54,267
Barges	2,892	1,609,590	2,860	1,580,150	5,752	3,189,740
Total, sailing	17,579	3,339,780	17,883	3,292,200	35,462	6,631,980
Grand total	83,816	33,073,392	80,643	31,822,230	164,459	64,895,622

REPORTS, RETURNS AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE FISCAL YEAR ENDED MARCH 31

1917

PART I—EXCISE

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1917

[No. 12—1918]

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to transmit to Your Excellency the RETURNS AND STATISTICS of Inland Revenue of the Dominion of Canada, for the year ended March 31, 1917, as prepared and laid before me by the Deputy Minister of Inland Revenue.

All of which is respectfully submitted.

ALBERT SÉVIGNY,
Minister of Inland Revenue.

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EXCISE

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	Pge.	Pge	Pge	Pge	Pge	Pge	Pge	Pge	Pge	Pge	Pge
Return of Manufactures—Showing the number of Licenses issued and Fees collected, the materials used, the quantity produced, the amount of duties collected, ex-manufactory, and the amount of duties accruing upon excisable articles warehoused	70	76	81	85	92	97	98	105	106	114	116
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Return of Warehouse Transactions—Showing the quantity of excisable goods remaining in bonded warehouses of each Collection Division, respectively, from previous years; quantity placed in warehouse ex-factory during the year ended March, 31, 1917, placed in warehouse from other Collection Divisions; also, quantity ex-warehoused for consumption, with duty accrued thereon; ex-warehoused to be rewarehoused in other Collection Divisions; ex-warehoused for exportation; also quantity used in bonded factories, and remaining in warehouse March 31, 1917	74	77	..	85 / 91	92	....	98	....	106	....	....
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SUPERANNUATION.						
How much deducted from each Officer's salary,						
INSURANCE FEES.						
How much deducted from each Officer's salary	162	133	173	178	183	156
RETIREMENT.						
How much deducted from each Officer's salary						
CONTINGENCIES.						
Authorized by the Department for office rent, fuel, travelling expenses, etc						

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REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE

To the Hon. Albert Sévigny,
Minister of Inland Revenue.

Sir,—Herewith I have the honour to submit statements of the Inland Revenues collected by this department during the fiscal year ended March 31, 1917, with the usual information as to the cost of collections, and statistics respecting the sources whence these revenues were derived.

The following summary comparison shows the accrued revenues for the fiscal years ended March 31, 1913, 1914, 1915, 1916, and 1917.

	1913.	1914.	1915.	1916.	1917.
	$	$	$	$	$
Excise	21,487,918	21,488,867	21,627,958	22,540,406	24,525,361
Ferry Licenses	529	964	989	989	989
Weights and Measures, Gas and Law Stamps	171,509	185,854	172,740	169,454	194,417
Electric Light	74,833	80,476	82,565	70,562	71,116
Other Revenues	7,501	5,523	103,932	8,490	9,885
War Tax				1,550,488	2,072,441
Methylated Spirits	118,077	116,208	96,747	111,846	183,708
Totals	21,860,367	21,877,892	22,084,931	24,452,235	27,057,917

Details of Excise Revenue accrued during the undermentioned fiscal Years:—

—	1	2	3	4	5
	1913.	1914.	1915.	1916.	1917.
	$	$	$	$	$
Spirits	9,474,142	9,038,028	8,706,481	8,701,075	9,880,567
Malt liquor	149,437	161,416	142,903	97,779	109,215
Malt	1,864,525	2,012,301	2,616,288	2,689,300	2,367,902
Tobbacco	9,192,181	9,489,426	9,352,881	10,222,784	11,197,103
Cigars	602,269	588,935	655,905	635,158	730,215
Acetic Acid	10,526	11,413	7,255	8,250	8,049
Manufactures in bond	91,460	92,160	94,904	105,812	110,409
Seizures	2,062	1,434	4,141	10,349	8,353
Other receipts	102,324	93,753	77,200	42,538	113,548
Totals	21,488,926	21,488,866	21,657,958	22,513,045	24,525,361

The quantity of spirits produced during the fiscal year was 6,400,119 proof gallons, as compared with 3,450,012 proof gallons produced in the previous fiscal year. The raw materials taken for use, in the production of spirits, during the fiscal year were as follows:—

	Lbs.
Malt	7,969,353
Indian corn	69,447,487
Rye	10,430,817
Wheat	27,782
Oats	131,580
Molasses	27,416,716

The transactions of the several distilleries will be found stated in detail in Appendix A (Statement No. 3), pages 72 and 73.

	Proof galls.
There was, on April 1, 1916, in process of manufacture	332,731
Manufactured during the fiscal year	6,400,119
Returned to distilleries for redistillation—In bond	265,156
Received into distilleries from other sources—Duty paid	* 6,826
" " " " In bond	570
Total	7,055,402

This was disposed of as follows:—

	Proof galls.
Placed in warehouse	6,778,415
Fusel oil written off	12,981
Deficiency arising from rectification	3,080
Remaining in process of manufacture March 31, 1917, by actual stock taking	260,926
Total	7,055,402

Spirits.—The following statement shows the warehousing transactions in spirits during the fiscal Year ended March 31, 1917, and the four preceding fiscal years:—

Fiscal Years.	1	2	3	4	5	6	7	8	9
	In Warehouse at beginning of year, including transits.	Warehoused during the year. Ex-distillery.	Otherwise warehoused.	Taken for consumption.	Exported.	Used in bonded factories	Otherwise accounted for.	For redistillation.	In Warehouse at end of year, including transits.
	Pf. Galls.	Pf. Galls.	Pf. Galls.	Pf. Galls.	Pf. Galls.	Pf. Galls.	Pf. Galls.	Pf. Galls.	Pf. Galls.
1912-1913	20,669,334	6,993,602	203	4,999,937	333,802	440,826	581,305	639,109	20,668,160
1913-1914	20,668,160	7,488,904	66,510	4,762,618	335,970	451,567	545,437	566,006	21,561,976
1914-1915	21,561,976	6,490,682	45,918	4,021,090	275,911	474,033	459,038	369,168	22,499,336
1915-1916	22,499,336	3,941,105	88,346	3,629,324	808,135	1,160,360	388,160	443,690	20,099,118
Totals	85,398,806	24,914,293	200,977	17,412,969	1,753,818	2,526,786	1,973,940	2,017,973	84,828,590
Average	21,349,701	6,228,573	50,244	4,353,242	438,455	631,697	493,485	504,493	21,207,148
1916-1917	20,099,118	6,778,415	21,600	4,118,147	1,289,117	4,273,682	603,058	265,156	17,170,242

The foreign demand for Canadian distillery products is greater than the average of the last four years, the quantities exported being as follows:—

	Proof galls.
1912-1913	333,802
1913-1914	335,970
1914-1915	275,911
1915-1916	808,135
1916-1917	1,289,117

The following statement shows the entire quantities of spirits upon which duties were collected during the several fiscal years recited therein. To accord with the figures shown in Financial Statement No. 12, pages 26 and 27:—

Fiscal Years.	Canadian Spirits.		Imported Spirits used in Bonded Factories.	Total quantities upon which duty was collected.	Revenue accrued, including License Fees.
	Paid duty Ex-distillery.	Paid duty Ex-warehouse.			
	Pf. Gallons	Pf. Gallons.	Pf. Gallons.	Pf. Gallons.	$
1912-1913	2,508	4,999,937	.....	5,002,445	9,474,142
1913-1914	2,001	4,762,618	66,497	4,831,116	9,038,028
1914-1915	6,407	4,021,090	44,690	4,072,187	8,702,981
1915-1916	4,066	3,629,324	85,954	3,719,344	8,701,075
Totals	14,982	17,412,969	197,141	17,625,092	35,916,226
Average	3,745	4,353,242	49,285	4,406,273	8,979,057
1916-1917	3,080	4,118,147	125,140	4,246,367	9,880,566

Malt.—The following statement shows the transactions in malt during the fiscal Year ended March 31, 1917, and the four preceding fiscal Years:—

Fiscal Years.	1	2	3	4	5	6	7	8	9
	In Warehouse at beginning of year, including transits.	Manufactured during the year.	Imported.	Increases.	Taken for consumption.	Exported.	Otherwise accounted for.	In Warehouse at end of year, including transits.	Revenue accrued, including License Fees.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	$
1912–1913	36,634,900	118,673,161	5,001,022	984,235	123,920,607	198,800	2,911,677	34,262,234	1,864,525
1913–1914	34,262,234	133,740,168	10,263,724	736,800	133,794,639	161,820	4,894,662	40,151,805	2,012,301
1914–1915	40,151,805	119,917,181	3,363,587	713,406	111,037,743	228,180	3,453,416	49,426,640	2,616,288
1915–1916	49,426,640	74,053,211	1,379,490	829,448	89,476,590	2,501,130	3,801,448	29,909,621	2,689,300
Totals	160,475,579	446,383,721	20,007,823	3,263,889	458,229,579	3,089,930	15,061,203	153,750,300	9,182,414
Average	40,118,895	111,595,930	5,001,956	815,972	114,557,395	772,483	3,765,301	38,437,575	2,295,604
1916–1917	29,909,621	78,771,388	766,669	295,874	78,815,746	3,888,352	4,865,152	22,172,062	2,367,902

Tobacco.—The following statement shows the transactions in Tobacco, Cigarettes and Snuff during the fiscal Year ended March 31, 1917, and the four preceding fiscal Years:—

Fiscal Years.	1	2	3	4	5	6	7	8	9	10	11
	In Warehouse at beginning of year, including transits.	Manufactured during the year.	Taken for consumption.	Exported.	Otherwise accounted for.	In Warehouse at end of year, including transits.	Raw Leaf taken for consumption.	Canada Twist taken for consumption.	Total Tobacco taken for consumption.	Other Materials taken for consumption.	Revenue accrued, including License Fees.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	$
1912–1913	718,766	25,703,480	25,287,332	4,519	26,630	1,103,765	19,232,231	17,535	44,537,098	1,615,596	9,192,181
1913–1914	1,103,765	25,485,348	25,735,773	3,358	3,916	846,066	18,775,803	11,057	44,522,633	1,510,010	9,489,426
1914–1915	846,065	24,216,866	24,444,380	10,094	44,764	563,694	15,723,329	6,855	40,174,564	1,280,589	9,352,881
1915–1916	563,694	25,390,672	23,937,785	723,532	380,055	912,994	16,571,311	7,430	40,516,526	1,365,175	10,222,784
Totals	3,232,290	100,796,366	99,405,270	741,503	455,365	3,426,519	70,302,674	42,877	169,750,821	5,771,370	38,257,272
Average	808,073	25,199,092	24,851,318	185,376	113,841	856,630	17,575,668	10,719	42,437,705	1,442,843	9,564,318
1916–1917	912,994	25,980,442	24,651,225	922,033	670,804	625,847	17,470,422	5,685	42,127,332	1,548,809	11,197,103

Cigars.—The following statement shows the transactions in Cigars during the fiscal year ended March 31, 1917, and the four preceding fiscal years:—

Fiscal Years.	1 In Warehouse at beginning of year, including transits.	2 Manufactured during the year.	3 Assessments to bring production up to Standard.	4 Taken for Consumption.	5 Exported.	6 Otherwise accounted for.	7 In Warehouse at end of year, including transits.	8 Revenue accrued, including License Fees.
	No.	No.	No.	No.	No.	No.	No.	$
1912-1913	21,940,450	297,762,383	383,922	294,772,933	10,100	22,500	25,281,222	602,269
1913-1914	25,281,222	291,359,173	349,188	288,219,892	7,525	.....	28,762,166	588,935
1914-1915	28,762,166	226,147,875	1,304,626	236,866,542	16,100	30,000	19,302,025	625,905
1915-1916	19,302,025	209,628,956	207,672	207,647,808	11,225	624,925	20,854,795	635,158
Totals	95,285,863	1,024,898,387	2,245,408	1,027,507,175	44,950	677,425	94,200,208	2,452,267
Average	23,821,466	256,224,597	561,352	256,876,794	11,237	169,356	23,550,052	613,067
1916-1917	20,854,795	237,647,769	658,938	239,752,252	21,975	2,127,395	17,258,880	730,215

The revenues derived from goods manufactured in bond during the fiscal year ended March 31, 1917, and the four preceding fiscal years, were as follows:—

1912-1913	$ 91,460
1913-1914	92,160
1914-1915	94,904
1915-1916	105,812
1916-1917	110,409

Acetic Acid.—The revenues derived from Acetic Acid during the fiscal year ended March 31, 1917, and the four preceding fiscal years, were as follows:—

1912-1913	$ 10,526
1913-1914	11,413
1914-1915	7,255
1915-1916	8,250
1916-1917	8,049

Inspection of Petroleum.—The quantity of Petroleum and Naphtha inspected during the fiscal year was as follows:—

	Galls.
Petroleum	35,836,338
Naphtha	40,982,270
Total	76,818,608

Weights and Measures, Gas and Electric Light.—The usual special reports in relation to these Services have been prepared, containing all statistical information.

The aggregate revenues accrued from these Services were $257,250.13, the cost of the three Services being $296,305.56.

Prevention of Adulteration of Food and Agricultural Fertilizers.—The usual supplementary report in relation to this Service will be submitted, and the report of the Chief Analyst.

Methylated Spirits.—The quantity of methylated spirits manufactured during the fiscal year was 296,929.31 proof gallons, and the sales 298,378.75 proof gallons. A statement of details appears on pages 66, 67, and 116.

The price of this denatured alcohol is practically the actual cost of manufacture, and has been following varying prices on account of the constantly increasing cost of alcohols and naphtha :—

On and after the 14th January, 1917, the prices of methylated spirits have been as follows :—

Grade No. 1 "Standard" and grade No. 1 "Benzine" when consigned to points East of Winnipeg, or West of, and including Quebec, 95c. per Imperial gallon ; when consigned to points beyond Quebec and Winnipeg, the latter inclusive, 93c. per Imperial gallon.

Grade No. 2 "Standard" 95c. per Imperial gallon.

On and after the 27th February, 1917, the prices of methylated spirits have been as follows :—

Grade No. 1 "Standard" and grade No. 1 "Benzine" when consigned to points East of Winnipeg, or West of, and including Quebec, $1.10 per Imperial gallon ; when consigned to points beyond Quebec and Winnipeg, the latter inclusive, $1.08 per Imperial gallon.

Grade No. 2 "Standard" $1.10 per Imperial gallon.

On and after the 27th April, 1917, the prices of methylated spirits have been as follows :—

Grade No. 1 "Standard" and grade No. 1 "Benzine" when consigned to points East of Winnipeg, or West of, and including Quebec, $1.25 per Imperial gallon ; when consigned to points beyond Quebec and Winnipeg, the latter inclusive, $1.23 per Imperial gallon.

Grade No. 2 "Standard" $1.25 per Imperial gallon.

Appendix A shows the consumption of, and revenues derived annually, from spirits, tobacco, and other goods subject to Excise, and of similar goods subject to duties of Customs, per head of the population of the Dominion.

Appendix B contains, as usual, the details concerning illicit stills seized during the year.

Appendix C shows the amount of Excise Revenues collected at each out office and under various headings, separately.

I have the honour to be, Sir,

Your obedient servant,

J. U. VINCENT,
Deputy Minister.

Inland Revenue Department,
Ottawa, July 2, 1917.

APPENDIX A.

TABLE showing the Annual Consumption, per head, of the undermentioned articles, paying Excise and Customs Duties, and Revenue, per head, derived annually.

Years.	DOMINION OF CANADA.									
	Quantity.					Duty.				
	Spirits.	Beer.	Wines.	Tobacco.	Petroleum.	Spirits.	Beer.	Wines.	Tobacco.	Petroleum.
	Galls.	Galls.	Galls.	Lbs.	Galls.	$	$	$	$	$
1869	1·124	2·290	·115	1·755	·575	·761	·092	·037	·193	·041
1870	1·434	2·163	·195	2·190	1·103	·962	·085	·049	·259	·061
1871	1·578	2·490	·259	2·052	1·591	1·059	·095	·056	·336	·077
1872	1·723	2·774	·257	2·481	1·302	1·160	·108	·070	·422	·076
1873	1·682	3·188	·238	1·999	1·387	1·135	·120	·066	·350	·084
1874	1·994	3·012	·288	2·566	1·618	1·363	·119	·086	·442	·103
1875	1·394	3·091	·149	1·995	1·589	1·127	·114	·069	·428	·098
1876	1·204	2·454	·177	2·316	1·360	1·182	·098	·075	·513	·105
1877	·975	2·322	·096	2·051	1·103	·949	·109	·057	·446	·084
1878	·960	2·169	·096	1·976	.....	·927	·147	·052	·439	.....
1879	1·131	2·209	·104	1·954	.....	1·005	·125	·057	·449	.....
1880	·715	2·248	·077	1·036	.....	·772	·081	·055	·428	.....
1881	·922	2·293	·099	2·935	.....	·990	·081	·073	·443	.....
1882	1·009	2·747	·120	2·150	.....	1·084	·098	·092	·485	.....
1883	1·090	2·882	·135	2·280	.....	1·186	·103	·097	·473	.....
1884	·988	2·924	·117	2·476	.....	1·074	·104	·082	·365	.....
1885	1·126	2·639	·109	2·623	.....	1·198	·111	·074	·393	.....
1886	·711	2·839	·110	2·052	.....	1·007	·091	·074	·502	.....
1887	·746	3·084	·095	2·062	.....	1·045	·100	·066	·514	.....
1888	·645	3·247	·094	2·093	.....	·944	·110	·066	·509	.....
1889	·776	3·263	·097	1·953	.....	1·107	·114	·068	·529	.....
1890	·883	3·360	·104	2·043	.....	1·257	·121	·072	·539	.....
1891	·745	3·790	·111	2·292	.....	1·094	·137	·080	·590	.....
1892	·701	3·516	·101	2·291	.....	1·156	·211	·075	·680	.....
1893	·740	3·485	·094	2·314	.....	1·235	·218	·070	·691	.....
1894	·742	3·722	·089	2·264	.....	1·235	·205	·060	·683	.....
1895	·666	3·471	·090	2·163	.....	1·124	·161	·056	·645	.....
1896	·623	3·528	·070	2·120	.....	1·159	·164	·047	·639	.....
1897	·723	3·469	·084	2·248	.....	1·341	·213	·041	·671	.....
1898	·536	3·808	·082	2·358	.....	1·306	·126	·041	·615	.....
1899	·661	3·995	·086	2·174	.....	1·367	·174	·045	·841	.....
1900	·701	4·364	·085	2·300	.....	1·455	·185	·044	·853	.....
1901	·757	4·680	·099	2·375	.....	1·574	·195	·047	·864	.....
1902	·786	5·035	·090	2·371	.....	1·631	·211	·048	·902	.....
1903	·848	4·592	·094	2·483	.....	1·766	·200	·049	·967	.....
1904	·917	4·739	·092	2·664	.....	1·913	·217	·049	1·005	.....
1905	·895	5·123	·093	2·768	.....	1·898	·214	·049	1·036	.....
1906	·898	5·484	·095	2·898	.....	1·879	·238	·052	1·100	.....
*1907 (nine months)	·977	5·765	·095	3·048	.....	2·035	·257	·054	1·317	.....
1908	·939	6·146	·102	3·066	.....	1·965	·268	·057	1·194	.....
1909	·860	5·708	·091	3·105	.....	1·794	·241	·050	1·101	.....
1910	·883	5·713	·105	3·183	.....	1·843	·242	·057	1·059	.....
1911	·948	5·999	·114	3·323	.....	1·988	·257	·059	1·157	.....
1912	1·030	6·598	·114	3·679	.....	2·170	·288	·063	1·336	.....
1913	1·112	7·005	·131	3·818	.....	2·340	·320	·076	1·462	.....
1914	1·061	7·200	·124	3·711	.....	2·249	·328	·069	1·438	.....
1915	·872	6·071	·095	3·427	.....	2·086	·379	·051	1·361	.....
1916	·745	4·950	·062	3·329	.....	1·951	·362	·033	1·454	.....
1917	·698	4·188	·061	3·330	.....	1·788	·304	·033	1·520	.....
Average	·958	3·915	·116	2·478	.....	1·401	·176	·060	·748	.....

APPENDIX B.

Statement of seizures of illicit Manufactures for the year ended March 31, 1917.

Divisions.	Number	Date.	Names.	Residence.	Schedule Value.	Remarks.
		1916.			$ cts.	
Montreal	1375	April 7..	A. Boissonnault	Montreal	5 50	Fine $100, imposed and paid.
"	1376	July 5..	Bisson & Giguere	"	247 00	Pending.
"	1378	Aug. 8..	J. B. Baillargeon	"	45 00	"
"	1384	Nov. 20..	A. Lippé	"	5 00	Fine $100, imposed and paid.
		1917.				
"	1390	Feb. 5..	Boyer, Corrie, Gauthier & Languedoc	Cartierville	418 96	" 100 to each, imposed and paid.
"	1391	" 8..	E. Clairemont	Outremont	50 00	Pending.
"	1392	" 12..	Michaelson & Kramer	Montreal	1 50	"
		1916.				
Quebec	659	July 12..	E. Berubé	Kamouraska	5 00	Fine $ 50, imposed and paid.
"	665	Oct. 26..	H. Croteau	St. Narcisse	10 00	" 125 " "
St. Hyacinthe	132	Aug. 14..	T. Duff	St. Eulalie	20 75	Serving 7 months in jail.
"	133	" 14..	A. Leblanc & J. Massé	St. Louis de Blandford	6 00	" 7 "
Three Rivers	118	" 3..	M. Lefebvre	St. Flore	4 00	" 6 "
"	119	Oct. 14..	E. Perron	St. Adolphe	2 00	Fine $100, imposed and paid.

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX C.

STATEMENT showing the amount of Excise and other Revenue collected at each of the undermentioned Out-Offices during the year ended March 31, 1917.

Divisions.	Out-Offices.	Licenses.	Spirits.	Malt Liquor.	Malt.	Tobacco.	Cigars.	Manufactures in Bond.	Other Receipts.	Electric Light Inspection Fees.	War Tax.	Totals.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Belleville	Deseronto											
	Picton											
	Trenton	50 00	2,653 37									2,703 37
Brantford	Delhi											
	Ingersoll								1,666 10			1,666 10
	Norwich	50 00						2,568 37	1,090 81			3,709 18
	Paris								853 19			853 19
	Port Dover								343 42			343 42
	Port Rowan								192 00			192 00
	Simcoe	50 00	10,392 44						2,055 82			12,498 26
	St. George								247 30			247 30
	Tavistock											
	Waterford											
	Woodstock	50 00				492 52	219 00		5,083 07			5,781 59
	Tillsonburg								1,206 41			1,206 41
Guelph	Berlin											
	Galt	150 00			2,588 19		99 75		2,946 94			5,784 88
	Kitchener	350 00	33,701 48		21,063 00	1,103 48	1,695 46		7,142 41			65,055 83
	New Hamburg	50 00			3,089 16							3,139 16
	Preston	100 00			3,519 00				3,243 07			6,862 07
	Waterloo	550 00	220,581 13		90,975 12	612 64	1,149 00		8,426 02			322,293 91
Hamilton	Dundas	200 00			16,546 62						583 25	17,329 87
Kingston	Napance								393 16		1,029 06	1,422 22
London	Aylmer								593 37			593 37
	Glencoe								437 10			437 10
	Petrolia	2 00							920 70			922 70
	Sarnia	113 50	8,653 54			79 80	97 05		3,664 46			12,608 35
	St. Thomas	250 00			4,033 80	3,872 40	2,209 20		4,237 93			14,603 33
	Strathroy								1,431 75			1,431 75
Ottawa	Buckingham	50 00	11,124 45								390 14	11,564 59
	Ville-Marie											
Owen Sound	Collingwood	50 00									175 00	225 00
	Kincardine											

	Meaford											
	Neustadt	100 00		4,446 00						29 00	4,575 00	
	Walkerton	100 00	908 47	5,744 94						1,033 05	7,786 46	
	Wiarton											
Perth	Arnprior	50 00	664 99					2 40		1,585 37	2,302 76	
	Eganville	50 00	9,682 92							76 50	9,809 42	
	Haileybury											
	Mattawa	50 00	2,441 99							31 99	2,523 98	
	New Liskeard	50 00	9,518 04							374 85	9,942 89	
	North Bay	112 50	9,970 13							1,309 90	11,392 53	
	Cobalt					5 46				2,119 62	2,125 08	
	Pembroke	75 00	3,164 39			216 90		79 46		102 72	3,638 47	
	Renfrew	825 00			290 00		1,200 00	0 30		400 00	2,715 30	
	Sturgeon Falls	50 00	4,680 37							378 50	5,108 87	
	Sudbury	300 00	40,020 83	34,200 00				0 30		2,272 55	76,793 68	
Peterborough	Cobourg	50 00	2,396 10							1,852 55	4,298 65	
	Lindsay	25 00								3,246 75	3,271 75	
	Port Hope											
Port Arthur	Dryden	75 00	36,519 97					748 60			37,343 57	
	Fort Frances	50 00	1,077 56					1,090 40			2,217 96	
	Fort William	175 00	25,142 66	12,000 00				1,540 56			38,858 22	
	Kenora	200 00	56,350 45	1,616 94				649 32			58,816 71	
	Rainy River	50 00	8,757 00					333 94			9,140 94	
	Wabigoon											
Prescott	Brockville	200 00	3,393 97	1,200 00	668 36	1,011 60		1,772 44			8,246 37	
	Cornwall	50 00		37,672 80				1,770 80			39,493 60	
St. Catharines	Beamsville											
	Bridgeburg							5,832 62			5,832 62	
	Cayuga							138 60			138 60	
	Crystal Beach											
	Dunnville											
	Font Hill							79 25			79 25	
	Fort Erie											
	Grimsby											
	Humberstone	100 00			193 20	517 90		87 15			898 25	
	Merritton							28 00			28 00	
	Niagara Falls	75 00			239 96	493 05		10,743 41			11,551 42	
	Niagara-on-the-Lake							24 75			24 75	
	Port Colborne	50 00		11,400 00				574 20			12,024 20	
	Port Dalhousie							30 00			30 00	
	Queenstown											
	Ridgeway							198 00			198 00	
	Stamford							3,512 00			3,512 00	
	Thorold							733 50			733 50	
	Welland	50 00			84 00	277 80		621 20			1,033 00	
Stratford	Goderich	50 00	152 59					987 59			1,190 18	
	Listowel	100 00		2,338 50	1,556 80	1,685 10		1,536 53			7,216 93	
	Palmerston											
	St. Marys	50 00				41 15		1,149 85			1,241 00	

STATEMENT showing the amount of Excise and other Revenue collected at each of the undermentioned Out-Offices during the year ended March 31, 1917—*Continued.*

Divisions.	Out-Offices.	Licenses.	Spirits.	Malt Liquor.	Malt.	Tobacco.	Cigars.	Manufactures in Bond.	Other Receipts.	Electric Light Inspection Fees.	War Tax.	Totals.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Stratford—*Con.*	Seaforth								682 99			682 99
	Mitchell								4 55			4 55
	Clinton								283 18			283 18
	Migham								386 00			386 00
Toronto	Barrie	25 00							25 48		2,924 26	2,974 74
	Collingwood										777 67	777 67
	Hornby											
	Orillia											
	Sault Ste. Marie	300 00	23,039 95		12,300 00	931 88	885 30		21 80		3,124 46	40,603 39
	Whitby											
Windsor	Chatham	250 00	20,148 05			1,575 92	429 53	259 50			4,641 05	27,304 05
	Kingsville	100 00				981 20						1,081 20
	Leamington	475 00				2,286 25	128 15	8,695 70	627 00		920 35	13,132 45
	Wallaceburg										1,569 73	1,569 73
Joliette	Berthierville	250 00	17,245 35						21,483 50		161 25	39,140 10
	L'Assomption											
	L'Epiphanie	225 00				320 60	11,874 47				10 00	12,430 07
	St. Alexis	50 00				293 00						343 00
	St. Esprit										57 80	57 80
	St. Jacques											
	St. Elizabeth											
	St. Lin	100 00				4,295 56	1,359 00				58 90	5,813 46
	St. Roch	50 00				830 00					2 00	882 00
	Rawdon											
	St. Felix										2 00	2 00
Montreal	Chambly Basin											
	Lachine											
	St. Jerome	100 00	20,092 95								720 50	20,913 45
	St. Laurent											
	St. Therese											
	Valleyfield	150 00	21,168 24		1,500 00						1,535 46	24,353 70
Quebec	Chicoutimi											
	Fraserville											

	Gaspe											
	Levis	100 00	4,230 71			12,372 50	13,192 86		2 60		604 11	30,502 78
	Roberval											
St. Hyacinthe	Farnham											
	L'Ange Gardien											
	St. Cesaire											
	St. John	200 00	13,960 31			562 80	153 18				721 40	15,597 69
	St. Ours											
	Sorel	50 00				204 54	203 58				1,344 99	1,803 11
	Vietoriaville	100 00	36,486 10			14 00	55 89		432 78		344 13	37,432 90
Sherbrooke	Granby	250 00				551,570 77	9,289 20		1,529 08			562,639 05
Three Rivers	Grand' Mere											
	La Tuque											
	Louiseville											
	St. Boniface	50 00				9,350 00						9,400 00
	St. Tite											
	Shawinigan Falls	50 00					318 00					368 00
	Notre Dame de Charrette	50 00				205 80						255 80
	Andover											
St. John	Bathurst											
	Campbellton											
	Campobello											
	Chatham											
	Clair											
	Dalhousie											
	Edmundston	50 00	2,068 96									2,118 96
	Fredericton											
	Grand Falls											
	Moncton											
	New Castle											
	Shediac											
	Sackville											
	St. Stephens	50 00	86 19						71 96			208 15
	St. Andrews											
	Sussex											
	Woodstock											
Halifax	Amherst								258 63		1,631 00	1,889 63
	Lunenburg										93 30	93 30
	Parrsborough										199 62	199 62
	Truro	50 00				4,111 60					1,371 60	5,533 20
	Weymouth										246 25	246 25
	Windsor										547 56	547 56
	Yarmouth	50 00				130 48	338 40				379 31	898 19
Pictou	Antigonish										316 50	316 50
	New Glasgow										1,995 15	1,995 15
	North Sydney	50 00	37,249 67								653 40	37,953 07
	Sydney	200 00	29,960 46			206 50					1,315 85	31,682 81
Charlottetown	Georgetown											

APPENDIX C—*Continued.*

STATEMENT showing the amount of Excise and other Revenue collected at each of the undermentioned Out-Offices during the year ended March 31, 1917—*Continued.*

Divisions.	Out-Offices.	Licenses.	Spirits.	Malt Liquor.	Malt.	Tobacco.	Cigars.	Manufactures in Bond.	Other Receipts.	Electric Light Inspection Fees.	War Tax.	Totals.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Charlottetown—*Con.*	Souris											
	Summerside											
	Alberton											
	Cardigan											
	Crapaud											
	Murray Harbour											
	Montague											
	St. Peters											
	Viguish											
Winnipeg	Brandon											
	Beausejour											
	Dauphin											
	Emerson											
	Gretna											
	Morden											
	Portage la Prairie											
	Selkirk											
	Transcona											
	Virden											
	York Factory											1,785 01
Calgary	Blairmore	50 00	1,221 47		513 54							
	Camrose											
	Edmonton	500 00	33,264 87		15,151 53	9,792 16	4,143 30	1,702 00	719 43		14,913 66	80 186 95
	Fort Saskatchewan											
	High River											
	Lacombe											
	Lethbridge	200 00	6,247 86		9,300 00	36 40	148 12			1 00	3,436 96	19,370 34
	Medicine Hat	75 00			3,780 00						1,592 37	5,447 37
	Pincher Creek											
	Red Deer											
	Stettler	100 00	329 11			21,449 38	8,662 10				584 89	31,125 48
	Strathcona											
	Taber		226 52								12 00	238 52

	Vermilion	50 00	885 62									935 62
	Wetaskiwin	50 00	5,281 56									5,331 56
Moose Jaw	Estevan											
	Gull Lake											
	Maple Creek	25 00	5,227 45								226 70	5,479 15
	Melville											
	North Battleford											
	Prince Albert	50 00			2,960 85						3,070 32	6,081 17
	Regina	301 00	339,648 95		3,163 98	157 08	80 02		144 69		13,901 54	357,397 26
	Rosthern											
	Saskatoon	150 00	23,264 01	228 75	10,815 00						15,247 33	49,705 09
	Swift Current											
	Weyburn											
Vancouver	Anaconda											
	Cranbrook	200 00	27,329 82		1,200 00						578 28	29,308 10
	Fernie	150 00	22,542 21		15,879 69	201 60	132 60				971 55	39,877 65
	Fort George											
	Golden	50 00	8,828 53								282 65	9,161 18
	Grand Forks	100 00			582 00						371 80	1,053 80
	Greenwood										303 55	303 55
	Kamloops	200 00	8,573 94		2,853 90	1,138 20	604 20				1,799 36	15,169 60
	Kelowna											
	Merritt	50 00			191 25						257 05	498 30
	Michel	100 00	15,801 11		5,565 00							21,466 11
	Moyie City											
	Nelson	200 00	45,332 22		6,720 00	541 38	372 68		77 28		1,861 59	55,105 15
	New Westminster	325 00	3,276 88	2,055 45	9,000 00	4,191 67	2,028 38				2,061 60	22,938 98
	Phoenix	50 00			3,650 22						142 40	3,842 62
	Prince Rupert	50 00	8,074 14				4 77				2,269 70	10,398 61
	Princetown	50 00			1,080 00						285 30	1,415 30
	Revelstoke	150 00	9,055 22		2,371 95	236 32	174 75				787 10	12,775 34
	Rossland	150 00	8,381 04		3,189 00	889 28	320 02				342 40	13,271 74
	Trail	50 00			7,200 00						819 80	8,069 80
	Vernon	250 00	5,658 96		877 20	23 81					1,320 86	8,130 83
Victoria	Cumberland	50 00									441 36	491 36
	Ladysmith					202 16	111 75				192 33	506 24
	Nanaimo	350 00	12,382 22		12,000 00	1,479 52	808 73				1,595 70	28,616 17
	Sidney											
Dawson	Yukon											
Total		12,629 00	1,318,519 49	2,284 20	384,279 18	639,712 52	65,537 40	14,425 57	107,192 15		114,930 55	2,659,510 06

INLAND REVENUE DEPARTMENT,
OTTAWA, July, 2, 1917.

J. U. VINCENT,
Deputy Minister.

FINANCIAL STATEMENTS, 1916-1917

DR. No. 1.—GENERAL REVENUES ACCOUNT FOR THE YEAR ENDED MARCH 31, 1917. CR.

Memo. of Refunds deducted below.	Amounts deposited to the Credit of the Receiver General.	Balances due March 31, 1917.	Totals.	Services.	Revenues of previous year not collected April 1, 1916.	Revenues accrued 1916-1917.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
286,998 02	24,523,695 46	21,497 24	24,545,192 70	Excise and Seizures, per Statement No. 3	19,831 10	24,525,361 60	24,545,192 70
11 90	131,625 60	252 12	131,877 72	Weights and Measures, per Statement No. 18A and 18B	133 52	131,744 20	131,877 72
.....	54,157 35	.....	54,157 35	Gas Inspection, per Statement No. 20	.....	54,157 35	54,157 35
.....	71,467 18	.....	71,467 18	Electric Light Inspection, per Statement No. 22	.....	71,467 18	71,467 18
.....	9,910 10	.....	9,910 10	Law Stamps, per Statement No. 8	.....	9,910 10	9,910 10
.....	.....	45 04	45 04	Bill Stamps, per Statement No. 7	45 04	.....	45 04
338 50	8,138 44	.....	8,138 44	Sundry Minor Revenues, per Statement No. 9	.....	8,138 44	8,138 44
6,973 80	2,072,441 42	.....	2,072,441 42	War Tax Revenue, per Statement No. 3A	.....	2,072,441 42	2,072,441 42
.....	183,708 28	.....	183,708 28	Methylated Spirits, per Statement No. 25	.....	183,708 28	183,708 28
.....	974 00	1,848 62	2,822 62	Ferry Licenses Revenue, per Statement No. 11	1,833 62	989 00	2,822 62
294,322 22	27,056,117 83	23,643 02	27,079,760 85		21,843 28	27,057,917 57	27,079,760 85
.....	294,322 22	.....	294,322 22	.....Less—Refunds per Statement No. 15.....	.....	294,322 22	294,322 22
.....	26,761,795 61	.....	26,785,438 63	.....Totals.....	.....	26,763,595 35	26,785,438 63

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 2.—GENERAL EXPENDITURES FOR

Balances due to Collectors, etc. April 1, 1916.	Expenditures Authorized by the Department.			Balances due by Collectors, etc. March 31, 1917.	Totals.	Services.
	Salaries.	Contingencies.	Seizures.			
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
49 08	492,591 20	190,886 34	615 28	343 98	684,485 88	Excise and Seizures per Statement No. 4.
.....	.....	.....	7,571 00	.....	7,571 00	Excise seizures, distributed per Appendix B. Stat. No. 2.
.....	84,999 59	11,754 92	.....	.....	96,754 51	Preventive service per Statement No. 5.
.....	3,532 87	37,990 20	.....	.....	41,523 07	Adulteration of Food per Statement No. 6 and Appendix B. No. 4.
.....	.....	1,272 93	.....	.....	1,272 93	Sundry Minor Expenditures per Statement No. 10.
.....	135,431 97	19,327 55	.....	16 66	154,776 18	Department Expenditures per Statement No. 16.
.....	109,951 11	78,135 49	.....	3 70	188,090 30	Weights and Measures per Statement No. 19A.
.....	47,426 58	14,309 54	.....	212 88	61,949 00	Gas Inspection per Statement No. 21.
2 70	19,542 54	26,940 30	.....	.....	46,485 54	Electric Light Inspection per Statement No. 23.
.....	.....	154,788 74	.....	.....	154,788 74	Methylated Spirits per Statement No. 25.
.....	.....	43,095 25	.....	.....	43,095 25	War Tax per Statement No. 4A.
51 78	893,475 86	578,501 26	8,186 28	577 22	1,480,792 40	.....Totals.....

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

THE YEAR ENDED MARCH 31, 1917. CR.

Balances due by Collectors, etc. April 1, 1916.	Amount disbursed by Rec. General on requisition of the Department.	Deductions from Salaries.				Annuities.	Balances due to Collectors, etc., March 31, 1917.	Totals.
		Superannuation.	Insurance.	Retirement.	Guarantee.			
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
343 98	660,001 43	3,226 78	3,932 85	15,470 35	1,321 01	140 40	49 08	684,485 88
.....	7,571 00	.....	.....	.....	.....	.....	.....	7,571 00
.....	96,675 20	.....	.....	.....	79 31	.....	.....	96,754 51
.....	41,494 73	13 92	.....	.....	14 42	.....	.....	41,523 07
.....	1,272 93	.....	.....	.....	.....	.....	.....	1,272 93
16 66	148,216 66	494 86	1,214 07	4,833 93	.....	.....	.....	154,776 18
3 70	187,447 34	155 28	243 16	.....	240 82	.....	.....	188,090 30
212 88	61,524 53	13 80	.....	90 00	107 79	.....	.....	61,949 00
.....	46,418 71	1 92	9 96	.....	52 25	.....	2 70	46,485 54
.....	154,788 74	.....	.....	.....	.....	.....	.....	154,788 74
.....	43,095 25	.....	.....	.....	.....	.....	.....	43,095 25
577 22	1,448,506 52	3,906 56	5,400 04	20,394 28	1,815 60	140 40	51 78	1,480,792 40

J. U. VINCENT,
Deputy Minister.

EXCISE

No. 3.—Collection Divisions

Balances due April 1, 1916.	Amount accrued during Year, including License Fees.							
	Spirits.	Malt Liquor.	Malt.	Tobacco.	Cigars.	Acetic Acid.	Bonded Manufactures.	Seizures.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
0 50	146,137 75	50 00	99,674 40	370 38	311 00	.....	.....	.....
112 61	30,999 47	50 00	7,692 12	6,704 60	6,378 85	.....	2,618 37	3 50
.....	262,596 82	454 95	131,578 63	2,184 00	3,715 16	.....	50 00	5 00
.....	270,115 48	100 00	71,004 86	754,402 06	47,345 89	50,00	6,900 22	.....
.....	41,550 88	100 00	5,625 93	10,638 74	7,464 87	.....	3,667 77	.....
.....	20,160 94	200 00	64,869 49	166,488 96	90,488 35	.....	.....	.....
.....	372,791 47	100 00	24,711 90	23 60	.....	.....	.....	760 00
.....	.....	200 00	10,190 94	5,551 72	2,666 15	.....	3,228 54	25 00
.....	137,244 40	50 00	34,200 00	.....	222 36	.....	600 00	304 00
.....	2,446 67	50 00	7,890 00	380 24	355 98	.....	.....	.....
.....	158,997 77	150 00	20,516 94	.....	.....	.....	.....	.....
.....	145,635 73	100 00	48,214 35	753 36	1,111 60	.....	300 00	245 00
.....	8,834 51	100 00	26,749 50	1,688 12	3,352 15	.....	.....	.....
.....	27,528 36	100 00	3,999 99	5,252 57	2,724 44	.....	50 00	10 00
.....	1,113,586 61	400 00	303,121 15	109,636 69	51,610 48	.....	43,829 54	50 00
.....	509,799 39	100 00	60,800 00	30,284 13	20,955 54	.....	9,245 70	.....
522 89	.....	.....	.....	.....	.....	.....	.....	.....
636 00	3,248,426 25	2,304 95	920,840 20	1,094,359 17	238,702 82	50 00	70,490 14	1,402 50
1,036 08	28,315 67	.....	.....	13,013 35	22,380 43	.....	.....	48,70
739 98	3,213,246 45	28,438 95	842,451 52	8,820,066 86	364,002 16	7,999 39	9,887 69	4,223 56
.....	690,464 99	150 00	57,781 59	532,863 60	16,035 11	.....	5,383 04	945 00
.....	190,809 09	50 00	16,910 25	569,485 89	21,897 00	.....	300 00	50 00
.....	172,265 16	.....	5,256 00	46,139 87	20,863 56	.....	300 00	661 90
54 27	1,700 27	50 00	3,040 80	11,095 16	2,182 53	.....	.....	100 00
3,295 57	.....	.....	.....	.....	.....	.....	.....	.....
5,125 90	4,296,801 63	28,688 95	925,440 16	9,992,664 73	,447,360 79	7,999 39	15,870 73	6,029 16
.....	287,037 62	100 00	27,693 48	2,029 04	5,533 60	.....	1,679 08	200 00
1,442 62	.....	.....	.....	.....	.....	.....	.....	.....
1,442 62	287,037 62	100 00	27,693 48	2,029 04	5,533 60	.....	1,679 08	200 00
.....	30,016 35	150 00	59,373 00	6,529 50	2,446 54	.....	.....	50 00
.....	67,210 13	.....	.....	957 73	512 45	.....	.....	120 00
5,860 50	.....	.....	.....	.....	.....	.....	.....	.....
5,860 50	97,226 48	150 00	59,373 00	7,487 23	2,958 99	.....	.....	170 00
.....	.....	.....	.....	24,734 32	.....	.....	.....	.....
.....	876,909 36	4,254 10	100,489 38	5,443 00	7,322 68	.....	14,685 04	200 00
5,563 99	78,382 34	350 00	104,162 21	32,604 50	14,450 07	.....	7,169 01	.....
.....	368,140 41	428 75	23,527 83	157 08	133 01	.....	.....	.....

SESSIONAL PAPER No. 12

1916-17

IN ACCOUNT WITH REVENUES.

Sundries.	Total Duties Accrued.	Total Debits.	Divisions.	Deposited to the Credit of Receiver General.	Balances due March 31, 1917.	Total Credits.
$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
2,163 27	248,706 80	248,707 30	..Belleville	248,707 30	.....	248,707 30
704 21	55,151 12	55,263 73	..Brantford	55,151 12	112 61	55,263 73
6,779 06	407,363 62	407,363 62	..Guelph	407,363 62	.....	407,363 62
3,223 26	1,153,141 77	1,153,141 77	..Hamilton	1,153,141 77	.....	1,153,141 77
916 62	69,964 81	69,964 81	..Kingston	69,964 81	.....	69,964 81
508 40	342,716 14	342,716 14	..London	342,716 14	.....	342,716 14
498 50	398,885 47	398,885 47	..Ottawa	398,885 47	.....	398,885 47
652 00	22,514 35	22,514 35	..Owen Sound	22,514 35	.....	22,514 35
2,273 46	174,894 22	174,894 22	..Perth	174,894 22	.....	174,894 22
138 60	11,261 49	11,261 49	..Peterborough	11,261 49	.....	11,261 49
550 00	180,214 71	180,214 71	..Port Arthur	180,214 71	.....	180,214 71
1,963 00	198,323 04	198,323 04	..Prescott	198,323 04	.....	198,323 04
108 10	40,832 38	40,832 38	..St. Catharines	40,832 38	.....	40,832 38
121 05	39,786 41	39,786 41	..Stratford	39,786 41	.....	39,786 41
33,003 56	1,655,238 03	1,655,238 03	..Toronto	1,655,238 03	.....	1,655,238 03
18,024 30	649,209 06	649,209 06	..Windsor	649,209 06	.....	649,209 06
.....	.....	522 89	..Suspense Account	.....	522 89	522 89
71,627 39	5,648,203 42	5,648,839 42	.....*Ontario*.....	5,648,203 92	635 50	5,648,839 42
19,300 30	83,058 45	84,094 53	..Joliette	83,058 45	1,036 08	84,094 53
6,997 78	13,297,314 36	13,298,054 34	..Montreal	13,295,647 72	2,406 62	13,298,054 34
1,917 90	1,305,541 23	1,305,541 23	..Quebec	1,305,541 23	.....	1,305,541 23
402 00	799,904 23	799,904 23	..Sherbrooke	799,904 23	.....	799,904 23
2,101 45	2,475,87 94	247,587 94	..St. Hyacinthe	247,587 94	.....	247,587 94
.....	18,168 76	18,223 03	..Three Rivers	18,168 76	54 27	18,223 03
.....	.....	3,295 57	..Suspense Account	.....	3,295 57	3,295 57
30,719 43	15,751,574 97	15,756,700 87	.....*Quebec*.....	15,749,908 33	6,792 54	15,756 700 87
977 30	325,250 12	325,250 12	..St. John	325,250 12	.....	325,250 12
.....	.....	1,442 62	..Suspense Account	.....	1,442 62	1,442 62
977 30	325,250 12	326,692 74	.....*New Brunswick*.....	325,250 12	1,442 62	326,692 74
329 00	98,894 39	98,894 39	..Halifax	98,894 39	.....	98,894 39
275 00	69,075 31	69,075 31	..Pictou	69,075 31	.....	69,075 31
.....	.....	5,860 50	..Suspense Account	.....	5,860 50	5,860 50
604 00	167,969 70	173,830 20	.....*Nova Scotia*.....	167,969 70	5,860 50	173,830 20
.....	24,734 32	24,734 32	..Charlottetown, P.E.I...	24,734 32	.....	24,734 32
4,067 88	1,013,371 44	1,013,371 44	...*Winnipeg, Manitoba*.....	1,013,371 44	.....	1,013,371 44
2,259 80	239,377 93	244,941 92	.....*Calgary, Alberta*.....	239,377 93	5,563 99	244,941 92
493 70	392,880 78	392,880 78	..*Moosejaw, Saskatchewan*..	392,880 78	.....	392,880 78

EXCISE

No. 3—Collection Divisions

Balances due April 1, 1916.	Amount accrued during Year, including License Fees.							
	Spirits.	Malt Liquor.	Malt.	Tobacco.	Cigars.	Acetic Acid.	Bonded Manufactures.	Seizures.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1,202 09	508,125 27	67,338 15	142,277 61	25,373 38	11,310 20	.....	514 79	351 00
.....	112,828 19	5,550 45	62,400 00	12,250 07	2,443 10	.....	.....	.....
1,202 09	620,953 46	72,888 60	204,677 61	37,623 45	13,753 30	.....	514 79	351 00
.....	6,689 00	50 00	1,698 51	.....	.....	.....	.....	.....
19,831 10	9,880,566 55	109,215 35	2,367,902 38	11,197,102 52	730,215 26	8,049 39	110,408 79	8,352 66
.....	33,111 44	.....	249,057 86	2,505 55	115 71	.....	100 00	295 00
.....	9,847,455 11	109,215 35	2,118,844 52	11,194,596 97	730,099 55	4,049 39	110,308 79	8,057 66

Inland Revenue Department,
Ottawa, July 2, 1917.

SESSIONAL PAPER No. 12

1916-17.

IN ACCOUNT WITH REVENUES—*Concluded.*

Sundries.	Total Duties Accrued.	Total Debits.	Divisions.	Deposited to the Credit of Receiver General.	Balances due March 31, 1917.	Total Credits.
$ cts	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
2,321 70	757,612 10	758,814 19	..Vancouver.....	757,612 10	1,202 09	758,814 19
377 50	195,849 31	195,849 31	..Victoria.....	195,849 31	.....	195,849 31
2,699 20	953,461 41	954,663 50	.....*British Columbia*....	953,461 41	1,202 09	954,663 50
100 00	8,537 51	8,537 51	.....*Yukon*.....	8,537 51	.....	8,537 51
113,548 70	24,525,361 60	24,545,192 70	.....Totals.....	24,523,695 46	21,497 24	24,545,192 70
1,812 46	286,998 02	.....	..Less Refunds as per Statement No. 15.			
111,736 24	24,238,363 58		NET REVENUE.			

J. U. VINCENT,
Deputy Minister.

WAR TAX REVENUE, 1916-17.

No. 3 A.—Stamps, Embossing Cheques, Transportation Tickets, Telegrams, etc.

Divisions.	Amount of stamps sold by Collectors.	Transportation Tickets, Telegrams, Embossing Cheques, etc.	Fines.	Total Deposited to the credit of Receiver General.
	$ cts.	$ cts.	$ cts.	$ cts.
Belleville	4,970 81			
Brantford	17,748 71			
Guelph	15,463 41			
Hamilton	34,186 92			
Kingston	5,107 95			
London	26,172 79			
Ottawa	28,456 94			
Owen Sound	4,129 61			
Perth	11,965 73			
Peterborough	12,450 26			
Port Arthur	8,096 03			
Prescott	4,811 83			
St. Catharines	28,599 30			
Stratford	7,980 22			
Toronto	195,490 84			
Windsor	31,686 41			
Ontario	437,517 76	152,322 52	2,308 50	592,148 78
Joliette	1,199 34			
Montreal	109,653 50			
Quebec	20,841 76			
St. Hyacinthe	9,290 83			
Sherbrooke	4,559 10			
Three Rivers	1,714 00			
Quebec	147,258 53	772,161 73	2,626 00	922,046 26
St. John — New Brunswick	25,446 81	56,128 13		81,574 94
Halifax	19,973 17			
Pictou	6,706 94			
Nova Scotia	26,680 11	10,118 57	50 00	36,848 68
Charlottetown — Prince Edward Island	3,386 10	116 25		3,502 35
Winnipeg — Manitoba	91,838 20	10,642 89	150 00	102,631 09
Calgary — Alberta	48,347 78	775 89	189 85	49,313 52
Moose Jaw — Saskatchewan	47,583 01	47 00	509 46	48,139 47
Vancouver	51,778 24			
Victoria	19,337 19			
British Columbia	71,115 43	15,787 54	50 00	86,952 97

WAR TAX REVENUE, 1916-17.

No. 3 A.—Stamps, Embossing Cheques, Transportation Tickets, Telegrams, etc.—*Concluded.*

Divisions.	Amount of stamps sold by Collectors.	Transportation Tickets, Telegrams, Embossing Cheques, etc.	Fines.	Total Deposited to the credit of Receiver General.
	$ cts.	$ cts.	$ cts.	$ cts.
Dawson.....Yukon.....	944 28	140 50	.....	1,084 78
General, U.S.A., etc.....	.....	148,198 58	.....	148,198 58
	900,118 01	1,166,439 60	5,883 81	2,072,441 42
Less refunds as per statement No. 15...	.....	.....	.....	6,973 80
Net War Tax Revenue.....	.....	.....	.....	2,065,467 62

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

No. 4—Collection Divisions

Balances due by Collectors, April 1, 1916,	Amounts received from Department to meet Expenditures.	Deductions from Salaries for					Balances due to Collectors, March 31, 1917.	Totals.	Divisions.
		Superannuation.	Insurance.	Annuities.	Retirement.	Guarantee.			
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
43,98	15,200 48	76 92	419 22	.....	594 17	25 08	.....	16,359 85	..Belleville.....
.....	8,009 03	92 40	.....	.....	244 71	19 92	.....	8,366 06	..Brantford.....
.....	23,030 25	212 28	.....	.....	398 00	48 72	.....	23,689 25	..Guelph.....
.....	24,652 01	146 31	357 90	.....	836 21	71 28	.....	26,063 71	..Hamilton.....
.....	7,686 22	59 88	.....	.....	158 91	22 80	.....	7,927 81	..Kingston.....
.....	21,738 22	96 49	82 00	.....	741 58	54 00	.....	22,712 20	..London.....
.....	8,614 62	24 00	.....	.....	362 63	24 05	.....	9,025 30	..Ottawa.....
.....	7,286 82	55 92	.....	.....	120 00	15 84	.....	7,478 58	..Owen Sound.....
.....	13,479 69	15 96	162 36	.....	599 41	41 10	.....	14,298 52	..Perth.....
.....	3,292 79	18 96	.....	.....	117 39	11 76	.....	3,440 90	..Peterborough.....
.....	4,965 34	.....	.....	.....	218 52	10 80	.....	5,194 66	..Port Arthur.....
.....	13,789 60	37 92	378 72	140 40	569 34	38 04	.....	14,954 02	..Prescott.....
.....	6,568 61	.....	318 84	.....	242 33	24 96	.....	7,154 74	..Stratford.....
.....	6,810 65	75 60	.....	.....	129 96	15 12	.....	7,031 33	..St. Catharines.....
.....	53,010 70	300 12	453 64	.....	1,687 82	136 56	.....	55,588 84	..Toronto.....
.....	34,661 50	157 80	246 66	.....	972 72	96 84	49 08	36,184 60	..Windsor.....
.....	3,446 42	57 96	.....	.....	.....	9 00	.....	3,513 38	..Kingston District...
.....	3,327 31	.....	.....	.....	.....	9 00	.....	3,336 31	..Toronto District....
.....	3,709 14	.....	.....	.....	.....	9 00	.....	3,718 14	..Windsor District....
43,98	263,279 49	1,428 43	2,419 34	140 49	7,993 70	683 87	49 08	276,038 20	..*Ontario*.....
.....	11,977 71	44 43	265 50	.....	458 71	34 20	.....	12,780 55	..Joliette.....
.....	62,297 00	498 87	337 88	.....	1,997 27	168 03	.....	65,299 05	..Montreal.....
.....	23,418 62	147 51	81 69	.....	794 61	58 32	.....	24,500 75	..Quebec.....
.....	9,477 73	77 88	.....	.....	252 24	22 08	.....	9,829 93	..Sherbrooke.....
.....	12,316 10	43 92	82 08	.....	449 45	29 52	.....	12,921 07	..St. Hyacinthe.....
.....	2,199 97	31 92	.....	.....	.....	3 60	.....	2,235 49	..Three Rivers.....
.....	2,571 25	.....	.....	.....	126 18	9 00	.....	2,706 43	..Montreal District...
.....	2,968 63	.....	.....	.....	144 96	9 00	.....	3,122 59	..Quebec District. ..
.....	127,227 01	844 53	767 15	.....	4,223 42	333 75	.....	133,395 86	..*Quebec*.....
.....	13,511 57	131 88	.....	.....	357 83	37 20	.....	14,038 48	..St. John.....
.....	.....	.....	.....	.....	.....	.....	.....	2,934 48	
.....	2,811 78	.....	.....	.....	113 70	9 00	.....	.....	..Maritime District...
.....	16,323 35	131 88	.....	.....	471 53	46 20	.....	16,972 96	..*New Brunswick*.....
.....	12,112 75	149 37	.....	.....	79 26	33 84	.....	12,375 22	..Halifax.....
.....	3,778 67	27 96	.....	.....	94 92	9 36	.....	3,910 91	..Pictou.....
.....	15,891 42	177 33	.....	.....	174 18	43 20	.....	16,286 13	..*Nova Scotia*.....
100 00	2,567 14	.....	.....	.....	88 56	4 98	.....	2,760 68	..Charlottetown.....
100 00	2,567 14	.....	.....	.....	88 56	4 98	.....	2,760 68	..*Prince Edward Island*
200 00	21,875 69	128 52	239 22	.....	759 84	51 96	.....	23,255 23	..Winnipeg.....
.....	3,341 77	49 92	.....	.....	.....	9 00	.....	3,400 69	..Manitoba District...
200 00	25,217 46	178 44	239 22	.....	759 84	60 96	.....	26,655 92	..*Manitoba*.....
.....	8,749 44	.....	61 44	.....	329 84	17 52	.....	9,358 24	..Calgary.....
.....	4,229 98	55 44	.....	.....	.....	9 00	.....	4,294 42	..Calgary District....

SESSIONAL PAPER No. 12

1916-17.

IN ACCOUNT WITH EXPENDITURES.

Balances due to Collectors, April 1, 1916.	Expenditures authorized by the Department.						Balances due by Collectors, March 31, 1917.	Totals.
	Salaries.	Seizure Expenses.	Special Assistance.	Rent.	Travelling Expenses.			
$ cts.	$ cts.	$ cts	$ cts.	$ cts	$ cts.	$ cts.	$ cts.	$ cts.
.....	12,784 93	.....	75 00	.....	3,219 44	236 50	43 98	16,359 85
.....	7,324 73	.....	.....	.....	793 10	248 23	.....	8,366 06
.....	22,554 99	.....	540 96	.....	253 85	339 45	.....	23,689 25
.....	25,427 88	.....	200 04	.....	145 99	289 80	.....	26,063 71
.....	7,847 64	.....	.....	.....	9 80	70 37	.....	7,927 81
.....	21,316 07	.....	783 98	.....	297 95	314 20	.....	22,712 20
.....	8,458 14	.....	390 36	8 75	53 20	114 85	.....	9,025 30
.....	6,969 02	.....	124 98	.....	250 41	134 17	.....	7,478 58
.....	12,797 25	.....	500 66	400 00	239 36	361 25	.....	14,298 52
.....	3,299 75	.....	43 34	.....	28 05	69 76	.....	3,440 90
.....	4,374 84	.....	49 98	.....	427 15	342,69	.....	5,194 66
.....	14,293 28	15	406 98	.....	32 90	220 71	.....	14,954 02
.....	6,851 81	.....	60 00	.....	117 45	125 48	.....	7,154 74
.....	6,699 72	.....	60 00	60 00	65 35	146 26	.....	7,031 33
.....	52,529 72	.....	1,250 90	.....	474 43	1,333 79	.....	55,588 84
49 08	35,318 24	.....	37 70	60 00	371 26	348 32	.....	36,184 60
.....	2,899 92	.....	47 97	200 00	300 09	65 40	.....	3,513 38
.....	2,924 94	.....	.....	.....	399 70	11 67	.....	3,336 31
.....	3,000 00	.....	.....	.....	659 35	58 79	.....	3,718 14
49 08	257,672 87	15	4,572 85	728,75	8,138 83	4,831 69	43 98	276,038 20
.....	11,407 90	70	426 32	.....	535 70	409 93	.....	12,780 55
.....	60,225 46	211 65	1,389 06	.....	1,617 31	1,855 57	.....	65,299 05
.....	21,445 23	86 35	1,651 89	.....	659 40	657 88	.....	24,500 75
.....	8,949 60	.....	138 66	.....	454 05	287 62	.....	9,829 93
.....	11,191 50	104 00	305 97	396 00	547 65	375 95	.....	12,921 07
.....	1,599 96	.....	466 64	.....	19 00	149 89	.....	2,235 49
.....	2,524 95	.....	.....	.....	157 85	23 63	.....	2,706 43
.....	2,899 92	.....	.....	.....	163 96	58 71	.....	3,122 59
.....	120,244 52	402 70	4,378 54	396 00	4,154 92	3,819 18	.....	133,395 86
.....	13,764 11	9 80	40 00	.....	88 65	135 92	.....	14,038 48
.....	.....	.....	.....	.....	.....	.....	.....	2,934 48
.....	2,274 93	.....	.....	.....	556 70	102 85	.....	.....
.....	16,039 04	9 80	40 00	.....	645 35	238 77	.....	16,972 96
.....	11,962 23	.....	24 99	.....	185 80	202 20	.....	12,375 22
.....	3,299 88	190 28	90 00	.....	165 15	165 60	.....	3,910 91
.....	15,262 11	190 28	114 99	.....	350 95	367 80	.....	16,286 13
.....	1,772 83	7 85	60 00	.....	451 30	368 70	100 00	2,760 68
.....	1,772 83	7 85	60 00	.....	451 30	368 70	100 00	2,760 68
.....	21,686 60	.....	225 00	.....	562 58	581 05	200 00	23,255 23
.....	2,499 96	.....	.....	.....	796 88	103 85	.....	3,400 69
.....	24,186 56	.....	225 00	.....	1,359 46	684 90	200 00	26,655 92
.....	6,599 80	.....	460 06	.....	1,313 95	984 43	.....	9,358 24
.....	2,774 97	.....	.....	.....	1,479 45	40 00	.....	4,294 42

8 GEORGE V, A. 1918

EXCISEs

DR. No. 4—COLLECTION DIVISION

Balances due by Collectors, April 1, 1916.	Amounts received from Department to meet Expenditures.	Deductions from Salaries for					Balances due to Collectors, March 31, 1917.	Totals.	Divisions.
		Superannuation.	Insurance.	Annuities.	Retirement.	Guarantee.			
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
.....	13,179 42	55 44	61 44	.....	329 84	26 52	.....	13,652 66	..*Alberta*.....
.....	7,854 47	.....	.....	.....	323 14	20 13	.....	8,197 74	..Moosejaw, *Saskatchewan*.....
.....	21,425 58	46 47	301 00	.....	834 99	61 68	.....	22,669 72	..Vancouver.....
.....	9,946 88	144 84	144 70	.....	221 23	23 52	.....	10,481 17	..Victoria.....
.....	4,558 37	60 00	.....	.....	.....	9 00	.....	4,627 37	..British Columbia District.....
.....	35,930 83	251 31	445 70	.....	1,056 22	94 20	.....	37,778 26	..*British Columbia*....
.....	961 94	.....	.....	.....	49 92	7 20	.....	1,019 06	..*Yukon*.....
.....	4,193 37	62 46	.....	.....	.....	.....	.....	4,255 83	..Inspector of Dominion.....
.....	4,753 59	.....	.....	.....	.....	.....	.....	4,753 59	..Inspector of Malt Houses and Breweries.....
.....	3,831 91	96 96	.....	.....	.....	.....	.....	3,928 87	..Inspector of Distilleries.....
.....	413 40	.....	.....	.....	.....	.....	.....	413 40	..Inspector of Bonded Factories.....
343 98	521,624 71	3,226 78	3,932 85	140 40	15,470 35	1,321 01	49 08	546,109 16	
.....	8,553 16	.....	.....	.....	.....	.....	.....	8,553 16	..General Expenditures.....
.....	1,964 33	.....	.....	.....	.....	.....	.....	1,964 33	
									..Legal Expenses.....
.....	14,491 94	.....	.....	.....	.....	.....	.....	14,491 94	..Printing.....
.....	3,224 88	.....	.....	.....	.....	.....	.....	3,224 88	..Stationery.....
.....	3,145 71	.....	.....	.....	.....	.....	.....	3,145 71	..Commission to Customs Officers.....
.....	14,580 35	.....	.....	.....	.....	.....	.....	14,580 35	..Duty-pay to Officers in charge of most important establishments.....
.....	9,526 85	.....	.....	.....	.....	.....	.....	9,526 85	..Provisional Allowance.....
.....	82,889 50	.....	.....	.....	.....	.....	.....	82,889 50	..Printing Tobacco Stamps.....
343 98	660,001 43	3,226 78	3,932 85	140 40	15,470 35	1,321 01	49 08	684,485 88	..Grand Totals.....

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

1916-1917.

IN ACCOUNT WITH EXPENDITURES. CR.

Balances due to Collectors, April 1, 1916.	Expenditures authorized by the Department.						Balances due by Collectors, March 31, 1917.	Totals.
	Salaries.	Seizure Expenses.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
.....	9,374 77	.....	460 06	.....	2,793 40	1,024 43	.....	13,652 66
.....	6,467 27	.....	269 00	195 00	742 55	523 92	.....	8,197 74
.....	19,039 53	4 50	948 56	156 00	1,517 60	1,003 53	.....	22,669 72
.....	9,431 93	.....	540 43	.....	134 25	374 56	.....	10,481 17
.....	3,000 00	.....	.....	.....	1,545 60	81 77	.....	4,627 37
.....	31,471 46	4 50	1,488 99	156 00	3,197 45	1,459 86	.....	37,778 26
.....	999 96	.....	.....	.....	.....	19 10	.....	1,019 06
.....	3,124 92	.....	.....	.....	1,122 60	8 31	.....	4,255 83
.....	3,199 92	.....	.....	.....	1,487 25	66 42	.....	4,753 59
.....	2,774 97	.....	.....	.....	1,149 96	3 94	.....	3,928 87
.....	.....	.....	.....	.....	409 00	4 40	.....	413 40
49 08	492,591 20	615 28	11,609 43	1,475 75	26,003 02	13,421 42	343 98	546,109 16
.....	.....	.....	.....	.....	.....	8,553 16	.....	8,553 16
.....	.....	.....	.....	.....	.....	1,964 33	.....	1,964 33
.....	.....	.....	.....	.....	.....	14,491 94	.....	14,491 94
.....	.....	.....	.....	.....	.....	3,224 88	.....	3224 88
.....	.....	.....	.....	.....	.....	3,145 71	.....	3,145 71
.....	.....	.....	.....	.....	.....	14,580 35	.....	14,580 35
.....	.....	.....	.....	.....	.....	9,526 85	.....	9,526 85
.....	.....	.....	.....	.....	.....	82,889 50	.....	82,889 50
49 08	492,591 20	615 28	11,609 43	1,475 75	26,003 02	151,798 14	343 98	684,485 88

J. U. VINCENT,
Deputy Minister.

No. 4 A.—In Account with Expenditures.

Amount received from Department to meet Expenditures.	Totals.	Districts.	Expenditures authorized by the Department.			Totals.
			Special Assistance.	Travelling Expenses.	Sundries.	
$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.
552 23	552 23	Belleville	533 28	.....	18 95	552 23
210 13	210 13	Brantford	.....	93 10	117 03	210 13
24 23	24 23	Guelph	22 23	.....	2 00	24 23
419 21	419 21	Hamilton	399 96	8 60	10 65	419 21
6 83	6 83	Kingston	.....	.....	6 83	6 83
685 33	685 33	London	599 94	11 45	73 94	685 33
2,054 95	2,054 95	Ottawa	1,711 07	288 14	55 74	2,054 95
424 69	424 69	Owen Sound	395 98	.....	28 71	424 69
1,901 49	1,901 49	Perth	1,666 58	177 30	57 61	1,901 49
161 38	161 38	Peterboro	83 30	2 75	75 33	161 38
173 83	173 83	Port Arthur	149 94	.....	23 89	173 83
613 81	613 81	Prescott	599 94	.....	13 87	613 81
32 65	32 65	Stratford	.....	5 00	27 65	32 65
2,150 20	2,150 20	Toronto	2,147 24	.....	2 96	2,150 20
388 92	388 92	Windsor	379 14	.....	9 78	388 92
9,799 88	9,799 88	.....Ontario.....	8,688 60	586 34	524 94	9,799 88
1,116 15	1,116 15	Joliette	1,084 90	.....	31 25	1,116 15
3,326 96	3,326 96	Montreal	3,186 34	21 40	119 22	3,326 96
4,482 42	4,482 42	Quebec	4,049 67	320 15	112 60	4,482 42
82 50	82 50	Sherbrooke	.....	31 70	50 80	82 50
979 41	979 41	St. Hyacinthe	974 91	.....	4 50	979 41
816 63	816 63	Three Rivers	816 63	.....	.....	816 63
10,804 07	10,804 70	.....Quebec	10,112 45	373 25	318 37	10,804 07
316 88	316 88	St. John, N.B	.....	107 75	209 13	316 88

217 08	217 08	Halifax	74 97	25 00	117 11	217 08
74 89	74 89	Pictou		4 45	70 44	74 89
291 97	291 97	Nova Scotia	74 97	29 45	187 55	291 97
18 56	18 56	Charlottetown, P.E.I			18 56	18 56
1,052 51	1,052 51	Winnipeg, Man	951 58	42 00	58 93	1,052 51
3,613 34	3,613 34	Calgary, Alberta	3,583 14		30 20	3,613 34
312 10	312 10	Moosejaw, Sask	289 54		22 56	312 10
1,790 86	1,790 86	Vancouver	1,724 73	18 55	47 58	1,790 86
2,076 00	2,076 00	Victoria	1,976 00	100 00		2,076 00
3,866 86	3,866 86	British Columbia	3,700 73	118 55	47 58	3,866 86
30,076 17	30,076 17	Totals	27,401 01	1,257 34	1,417 82	30,076 17
11,955 33	11,955 33	General Contingencies			11,955 33	11,955 33
281 25	281 25	Printing			281 25	281 25
782 50	782 50	Special War Act Vote			782 50	782 50
43,095 25	43,095 25	Grand Totals	27,401 01	1,257 34	14,436 90	43,095 25

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

EXCISE PREVENTIVE SERVICE—1916-17.

DR. No. 5—IN ACCOUNT WITH EXPENDITURES. CR.

Amount received from Department to meet Expenditures.	Deductions from salaries for guarantee.	Totals.	Districts.	Expenditures authorized by the Department.				Totals.
				Salaries.	Special Assistance.	Travelling Expenses.	Sundries.	
$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
899 19	0 81	900 00	Brantford	900 00				900 00
1,551 21	1 53	1,552 74	Hamilton	1,552 74				1,552 74
1,801 28	1 62	1,802 90	London	1,800 00		2 00	0 90	1,802 90
8,614 76	9 45	8,624 21	Ottawa	8,095 39	101 18	361 95	65 69	8,624 21
1,198 02	1 98	1,200 00	Toronto	1,200 00				1,200 00
1,549 18	1 62	1,550 80	Windsor	1,550 80				1,550 80
15,613 64	17 01	15,630 65	Ontario	15,098 93	101 18	363 95	66 59	15,630 65
3,371 27	3 69	3,374 96	Joliette	2,975 00	399 96			3,374 96
24,769 40	22 17	24,791 57	Montreal	23,449 50	1,153 47	159 10	29 50	24,791 57
11,125 47	7 83	11,133 30	Quebec	8,445 11	2,591 04	97 15		11,133 30
1,123 46	0 81	1,124 27	Sherbrooke	900 00	199 92	24 35		1,124 27
6,361 40	4 92	6,366 32	St. Hyacinthe	5,850 00		511 07	5 25	6,366 32
2,701 89	1 86	2,703 75	Three Rivers	2,700 00			3 75	2,703 75
49,452 89	41 28	49,494 17	Quebec	44,319 61	4,344 39	791 67	38 50	49,494 17
1,981 63	1 26	1,982 89	St. John, N.B	999 96	799 92	182 01	1 00	1,982 89
1,411 59	0 81	1,412 40	Halifax	900 00	512 40			1,412 40
1,008 49		1,008 49	Pictou		900 00	102 85	5 64	1,008 49
2,420 08	0 81	2,420 89	Nova Scotia	900 00	1,412 40	102 85	5 64	2,420 89
702 74	0 81	703 55	Charlottetown, P.E.I	352 65	300 00	49 90	1 00	703 55
3,722 34	2 58	3,724 92	Winnipeg, Man	2,925 00	799 92			3,724 92
2,697 57	2 43	2,700 00	Calgary	2,700 00				2,700 00

132 72	08	132 80	.....Moosejaw, Sask.....	32 25	.....	85 55	15 00	132 80
3,776 15	43	3,778 58	.....Vancouver, B.C.....	2,700 00	1,075 08	3 50	.....	3,778 58
80,499 76	68 69	80,568 45	.....Totals.....	70,028 40	8,832 89	1,579 43	127 73	80,568 45
1,214 87	.....	1,214 87	.....General Contingencies.....	.....	.....	.....	1,214 87	1,214 87
81,714 63	68 69	81,783 32	.....Grand totals.....	70,028 40	8,832 89	1,579 43	1,342 60	81,783 32

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES PREVENTIVE SERVICE—1916-17.

Dr. No. 5A.—In Account with Expenditures. Cr.

Amount received from Department to meet Expenditures.	Deductions from Salaries for Guarantee.	Totals.	Districts.	Expenditures authorized by the Department	Totals.
$ cts.	$ cts.	$ cts		$ cts.	$ cts.
899 46	0 54	900 00	Kingston	900 00	900 00
3,312 17	2 34	3,314 51	Ottawa	3,314 51	3,314 51
4,211 63	2 88	4,214 51	*Ontario*	4,214 51	4,214 51
982 04	1 26	983 30	Montreal	983 30	983 30
1,798 92	1 08	1,800 00	St. Hyacinthe	1,800 00	1,800 00
2,780 96	2 34	2,783 30	*Quebec*	2,783 30	2,783 30
899 46	0 54	900 00	Halifax, N.S.	900 00	900 00
899 46	0 54	900 00	Charlottetown, P.E.I.	900 00	900 00
669 62	0 54	670 16	Winnipeg, Man.	670 16	670 16
374 46	0 54	375 00	Calgary	375 00	375 00
1,552 14	1 08	1,553 22	Edmonton	1,553 22	1,553 22
1,926 60	1 62	1,928 22	*Alberta*	1,928 22	1,928 22
2,673 38	1 62	2,675 00	Regina	2,675 00	2,675 00
899 46	0 54	900 00	Saskatoon	900 00	900 00
3,572 84	2 16	3,575 00	*Saskatchewan*	3,575 00	3,575 00
14,960 57	10 62	14,971 19	*Grand Totals*	14,971 19	14,971 19

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

FOOD INSPECTION, 1916-17.

No. 6—In Account with Expenditures.

Dr. Cr.

Amount received from Department to meet Expenditures.	Superannuation.	Guarantee.	Totals.	Districts.		Expenditures authorized by the Department.					Totals.
						Salaries.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.	
$ cts.	$ cts.	$ cts.	$ cts.			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
341 70		1 08	342 78	Kingston		199 92			69 75	73 11	342 78
574 44		1 08	575 52	London		199 92			287 90	87 70	575 52
78 99		0 42	79 41	Ottawa		79 41					79 41
379 27		1 08	380 35	Toronto		199 92			72 79	107 64	380 35
1,374 40		3 66	1,378 06	*Ontario*		679 17			430 44	268 45	1,378 06
1,201 65	9 96	1 08	1,212 69	Montreal	J. J. Costigan	499 92	27 50		519 20	166 07	1,212 69
642 62		1 08	643 70	"	D. J. Kearney	399 96			110 00	133 74	643 70
671 52		1 08	672 60	Quebec		300 00		120 00	114 00	138 60	672 60
204 32		1 08	205 40	St. Hyacinthe		199 92				5 48	205 40
2,720 11	9 96	4 32	2,734 39	*Quebec*		1,399 80	27 50	120 00	743 20	443 89	2,734 39
566 66	3 96	1 08	571 70	St. John, N.B		199 92			227 70	144 08	571 70
605 32		1 08	606 40	Halifax		349 92			173 70	82 78	606 40
198 84		1 08	199 92	Sydney		199 92					199 92
804 16		2 16	806 32	*Nova Scotia*		549 84			173 70	82 78	806 32
214,46		0 47	214 93	Charlottetown, P.E.I		88 13			66 05	60 75	214 93
455 09			455 09	Winnipeg, Man					302 00	153 09	455 09
595 05		1 08	596 13	Calgary, Alta		300 00			164 70	131 43	596 13
16 10		0 03	16 13	North Battleford, Sask		16 13					16 13
405 94		1 08	407 02	Nelson		199 92			60 30	146 30	407 02
139 66		0 36	140 02	Vancouver		66 64			8 10	65 28	140 02
57 69		0 18	57 87	Victoria		33 32			11 05	13 50	57 87

FOOD INSPECTION, 1916-17.

DR. — No. 6—IN ACCOUNT WITH EXPENDITURES—*Concluded.* — CR.

Amount received from Department to meet Expenditures.	Superannuation.	Guarantee.	Totals.	Districts.	Expenditures authorized by the Department.					
					Salaries.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.	
$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
603 29	.....	1 62	604 91	*British Columbia*	299 88	.....	.....	79 95	225 08	604 91
3,312 21	.....	.....	3,312 21	Chief Analyst	.....	1,298 30	.....	.....	2,013 91	3,312 21
418 48	.....	.....	418 48	Hamilton	.....	.....	.....	302 45	116 03	418 48
99 15	.....	.....	99 15	Ottawa	.....	.....	.....	1 00	98 15	99 15
223 26	.....	.....	223 26	Armagh	.....	99 96	.....	82 00	41 30	223 26
124 81	.....	.....	124 81	Montreal	.....	95 76	.....	15 75	13 30	124 81
276 38	.....	.....	276 38	Montmagny	.....	99 96	.....	131 00	45 42	276 38
891 07	.....	.....	891 07	Pierreville	.....	799 92	.....	55 10	36 05	891 07
166 64	.....	.....	166 64	Quebec	.....	166 64	.....	.....	.....	166 64
200 00	.....	.....	200 00	Quebec	.....	200 00	.....	.....	.....	200 00
31 23	.....	.....	31 23	Quebec	.....	31 23	.....	.....	.....	31 23
448 71	.....	.....	448 71	St. Anselme	.....	183 26	.....	239 65	25 80	448 71
218,26	.....	.....	218 26	St. Fabien	.....	150 00	.....	48 85	19 41	218 26
750 82	.....	.....	750 82	St. Felix de Valois	.....	399 96	.....	227 55	123 31	750 82
290 19	.....	.....	290 19	St. Jerome	.....	199 92	.....	40 70	49 57	290 19
157 55	.....	.....	157 55	St. Octave	.....	150 00	.....	1 00	6 55	157 55
537 48	.....	.....	537 48	St. Perpetue	.....	300 00	.....	193 25	44 23	537 48
100 00	.....	.....	100 00	St. Philippe de Neri	.....	100 00	.....	.....	.....	100 00
193 72	.....	.....	193 72	Tracadie	.....	99 96	.....	58 15	35 61	193 72
640 48	.....	.....	640 48	Moose Jaw	.....	241 62	.....	288 85	110 01	640 48
974 17	.....	.....	974 17	Vancouver	.....	793 91	.....	39 45	140 81	974 17
1,723 54	.....	.....	1,723 54	Halifax Laboratory	.....	240 00	1,100 00	31 06	352 48	1,723 54
292 93	.....	.....	292 93	Winnipeg "	.....	.....	.....	.....	292 93	292 93
531 95	.....	.....	531 95	Vancouver "	.....	.....	.....	127 82	404 13	531 95
19,952 35	13 92	14 42	19,980 69	Totals	3,532 87	5,677 90	1,220 00	4,071 37	5,478 55	19,980 69
9,971 29	.....	.....	9,971 29	General	.....	.....	.....	.....	9,971 29	9,971 29
10,575 77	.....	.....	10,575 77	Printing	.....	.....	.....	.....	10,575 77	10,575 77
995 32	.....	.....	995 32	Stationery	.....	.....	.....	.....	995 32	995 32
41,494 73	13 92	14 42	41,523 07	Grand Totals	3,532 87	5,677 90	1,220 00	4,071 37	27,020 93	41,523 07

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

BILL STAMPS, 1916-17.

DR. No. 7—BILL STAMPS Distributors in Account with Inland Revenue Department. CR.

Balances, April 1, 1916.		Totals.	—	Balances, March 31st, 1917.		Totals.
Stamps on hand.	Cash on hand.			Stamps on hand.	Cash on hand.	
$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
1,372 77	.....	1,372 77	Post Office Department.....	1,372 77	.....	1,372 77
.....	11 54	11 54	Belleville, ex-collector, E. R. Benjamin.....	.....	11 54	11 54
.....	33 50	33 50	Three Rivers, ex-collector, B. Lasalle.....	.....	33 50	33 50
160 00	.....	160 00	McLeod, Col. J. F., Fort McLeod.....	160 00	.....	160 00
1,532 77	45 04	1,577 81	.....Totals.....	1,532 77	45 04	1,577 81

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

LAW STAMPS, 1916-17.

DR. No. 8—LAW STAMPS in Account with the Inland Revenue Department. CR.

Stamps on hand, April 1, 1916.	Stamps received from Department.	Totals.	—	Deposited to the Credit of the Receiver General	Stamps on hand, March 31, 1917.	Totals.
$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
149 05	2,800 00	2,949 05	Cameron, R., Registrar, Supreme Court.....	2,436 85	512 20	2,949 05
105 00	5,189 00	5,294 00	Morse, Chas, Registrar, Exchequer Court.....	5,205 00	89 00	5,294 00
6,472 80	4,000 00	10,472 80	Jackell, G. A., Controller, Yukon Territorial Court.....	2,268 25	8,204 55	10,472 80
6,726 85	11,989 00	18,715 85	.....Totals.....	9,910 10	8,805 75	18,715 85

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 9—SUNDRY MINOR REVENUES—1916-17. CR.

Accrued during the year ended March 31, 1917.	Totals.	—	Deposited to the Credit of the Receiver General.	Totals.
$ cts.	$ cts.		$ cts.	$ cts.
804 00	804 00	Registration of Agricultural fertilizers fees, $323.00—Licenses, $375—Fines, $106	804 00	804 00
4,793 15	4,793 15	Adulteration of food fees, $922.25—Penalties, $3,870.90	4,793 15	4,793 15
572 29	572 29	Casual revenue	572 29	572 29
1,444 00	1,444 00	Patent Medicines registration fees, $1,418.00—Fines, $26.00	1,444 00	1,444 00
525 00	525 00	Commercial feeding stuffs fees, $415—Licenses, $110	525 00	525 00
8,138 44	8,138 44		8,138 44	8,138 44
338 50	338 50	Less refund per statement No. 15	338 50	338 50
7,799 94	7,799 94		7,799 94	7,799 94

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 10—SUNDRY MINOR EXPENDITURES—1916-17. CR.

Amounts received from the Department to meet Expenditures.	Total.	—	Printing and Stationery.	Contingencies.	Totals.
$ cts.	$ cts.		$ cts.	$ cts.	$ cts.
131 00	131 00	Sundry, minor Expenditures		131 00	131 00
291 93	291 93	Special translation		291 93	291 93
850 00	850 00	Patent Medicines Act		850 00	850 00
1,272 93	1,272 93	Totals		1,272 93	1,272 93

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 11—FERRY LICENSES REVENUE FOR 1916-17. CR.

Balances due April 1, 1916.	Accrued during the year ended March 31, 1917.	Totals.	—	Deposited to the credit of the Receiver General.	Balances due March 31, 1917.	Totals.
$ cts.	$ cts.	$ cts.	*Ferries.*	$ cts.	$ cts.	$ cts.
.....	15 00	15 00	Buckingham and Cumberland	.....	15 00	15 00
.....	1 00	1 00	Brockville and Morristown	1 00	.....	1 00
.....	50 00	50 00	Buffalo and Point Abinot	50 00	.....	50 00
45 83	.....	45 83	Clair Station and Kent	.....	45 83	45 83
.....	10 00	10 00	Courtwright and St. Clair	10 00	.....	10 00
.....	10 00	10 00	Cross Point and Campbellton	10 00	.....	10 00
.....	1 00	1 00	Detroit and Windsor	1 00	.....	1 00
20 00	.....	20 00	Edmundston and Maine	.....	20 00	20 00
.....	10 00	10 00	Fassett and St. Thomas d'Alfred	10 00	.....	10 00
.....	5 00	5 00	Fitzroy and Onslow	5 00	.....	5 00
.....	50 00	50 00	Fort Erie and Buffalo Co	50 00	.....	50 00
.....	25 00	25 00	Fort Frances	25 00	.....	25 00
1,736 79	.....	1,736 79	Hull (old lease)	.....	1,736 79	1,736 79
.....	30 00	30 00	Niagara and Youngstown	30 00	.....	30 00
1 00	.....	1 00	Pembroke and Allumette Island (old lease)	.....	1 00	1 00
.....	130 00	130 00	Pembroke and Allumette Island (new lease)	130 00	.....	130 00
.....	1 00	1 00	Prescott and Ogdensburg	1 00	.....	1 00
.....	10 00	10 00	Queenston and Lewiston	10 00	.....	10 00
.....	25 00	25 00	Rainey River	25 00	.....	25 00
.....	510 00	510 00	Rockcliffe and Gatineau	510 00	.....	510 00
.....	5 00	5 00	Sand Point and Norway Bay	5 00	.....	5 00
.....	100 00	100 00	Sault Ste. Marie	100 00	.....	100 00
30 00	.....	30 00	St. Leonard and Van Buren	.....	30 00	30 00
.....	1 00	1 00	Walkerville and Detroit	1 00	.....	1 00
1,833 62	989 00	2,822 62	Totals	974 00	1,848 62	8,222 62

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

No. 12—STATEMENT showing the quantities of the several articles, subject to 1915, 1916, 1917 and

Articles subject to Excise Duty.	1915.			
	Quantities.			Duty.
	Ex-manufactory.	Ex-warehouse.	Totals.	
	Galls.	Galls.	Galls.	$ cts.
Spirits	6,407	4,021,090	4,027,497	8,689,574 33
	.....	44,690*	44,690	13,407 00
Totals	6,407	4,065,780	4,072,187	8,702,981 42
Malt liquor, the duty being paid on malt	47,955,947	7,278	47,963,225	137,003 23
	Lbs.	Lbs.	Lbs.	
Malt	.....	111,037,743	111,037,743	2,610,887 82
	No.	No.	No.	
Cigars from foreign leaf	.....	12,300	12,300	84 10
Cigars	138,170,411	98,683,831	236,854,242	613,021 07
Totals	138,170 411	98,696,131	236,866,542	613,105 17
Cigarettes	1,062,143,295	27,982,640	1,090,125,935	3,004,822 14
	Lbs.	Lbs.	Lbs.	
Tobacco from foreign leaf	.....	.....	.....	.....
Canada twist	.....	6,855	6,855	637 50
Tobacco	13,579,224	7,085,181	20,664,405	1,643,641 55
Snuff	509,597	.....	509,597	40,226 75
Totals	14,088,821	7,092,036	21,180,857	4,689,327 94
Raw leaf tobacco, foreign	.....	15,723,329	15,723,329	4,474,283 52
Other materials	.....	1,280,589	1,280,589	204,894 24
Total duties on tobacco and cigarettes	.....	.....	.....	9,348,505 70
Vinegar	.....	.....	.....	90,953 66
Acetic acid	.....	.....	.....	7,155 48
Licenses, spirits	.....	.....	.....	3,500 00
" Malt liquor	.....	.....	.....	5,900 00
" Malt	.....	.....	.....	5,400 00
" Cigars	.....	.....	.....	12,800 00
" Tobacco	.....	.....	.....	4,375 00
" Bonded manufactures	.....	.....	.....	3,950 00
" Acetic acid	.....	.....	.....	100 00
Grand total duty	.....	.....	.....	21,546,617 48

*Spirits imported for use in the manufacture of crude fulminate, on which duty, at the rate of 30 cents.

NL AND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

Excise Duty, taken for consumption, during the fiscal years ended March 31, the duty accrued thereon.

1916.				1917.			
Quantities.			Duty.	Quantities.			Duty.
Ex-manufactory.	Ex-warehouse.	Totals.		Ex-manufactory.	Ex-warehouse.	Totals.	
Galls.	Galls.	Galls.	$ cts.	Galls.	Galls.	Galls.	$ cts.
4,066	3,629,324	3,633,390	8,671,538 55	3,080	4,118,147	4,121,227	9,838,649 65
.....	85,954	* 85,954	25,786 13	.....	*125,140	125,140	37,541 90
4,066	3,715,278	3,719,344	8,697,324 68	3,080	4,243,287	4,246,367	9,876,191 55
39,488,374	150,503	39,638,877	92,079 45	34,687,356	139,928	34,827,284	103,865,35
Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	
2,946	89,473,644	89,476,590	2,684,699 63	225	78,815,521	78,815,746	2,364,752 38
No.	No.	No.		No.	No.	No.	
.....	3,800	3,800	26 60	.....	.....	.....	.....
134,992,358	72,651,650	207,644,008	623,081 23	166,647,097	73,105,155	239,752,252	719,390 26
134,992,358	72,655,450	207,647,808	623,107 83	166,647,097	73,105,155	239,752,252	719,390 26
1,061,670,760	20,653,950	1,082,324,710	3,252,797 58	1,277,629,790	29,646,960	1,307,276,750	3,929,130 15
Lbs.	Lbs.	Lbs.		Lbs.	Lbs.	Lbs.	
.....	175	175	43 75	.....	.....	.....	.....
.....	7,430	7,430	743 00	.....	5,685	5,685	568 50
12,996,915	7,149,484	20,146,399	2,015,414 76	12,915,722½	7,206,331½	20,122,054	2,012,205 40
544,237	.....	544,237	54,423 70	607,341	.....	607,341	60,734 10
13,541 152	7,157,089	20,698,241	5,323,422 79	13,523,063½	7,212,016½	20,735,080	6,002,638 15
.....	16,571,311	16,571,311	4,676,757 99	.....	17,470,422	17,470,422	4,942,516 93
.....	1,365,175	1,365,175	218,428 00	.....	1,548,809	1,548,809	247,809 44
.....	.....	.....	10,218,608 78	.....	.....	.....	11,192,964 52
.....	.....	.....	100,112 24	.....	.....	.....	104,333 79
.....	.....	.....	8,150 14	.....	.....	.....	7,949 39
.....	.....	.....	3,750 00	.....	.....	.....	4,375 00
.....	.....	.....	5,700 00	.....	.....	.....	5,350 00
.....	.....	.....	4,600 00	.....	.....	.....	3,150 00
.....	.....	.....	12,050 00	.....	.....	.....	10,825 00
.....	.....	.....	4,175 00	.....	.....	.....	4,138 00
.....	.....	.....	5,700 00	.....	.....	.....	6,075 00
.....	.....	.....	100 00	.....	.....	.....	100 00
.....	.....	.....	22,460,157 75	.....	.....	.....	24,403,460 24

per gallon, was collected and afterwards refunded, on the exportation of the fulminate.

J. U. VINCENT,
Deputy Minister.

No. 13.—Amounts deposited monthly to the credit of the Receiver General,

——	General.	Ontario.	Quebec.	New Brunswick.
	$ cts.	$ cts.	$ cts.	$ cts.
April—				
Excise		471,987 42	982,999 65	20,655 84
" Seizures		70 00	1,194 37	
Ferries		130 00		
Weights and Measures Inspection		851 90	616 45	
" " Seizures				
Gas Inspection		184 95	47 50	
Gas Seizures		60 00		
Electric Light Inspection		567 60	129 45	
Law Stamps (Supreme Court)				
" (Exchequer Court)				
" (Yukon Territorial Court)				
Patent Medicines Fees		79 00	38 00	4 00
" " Fines				
Fertilizers Fees		6 00	5 00	
" Fines		25 00		
Methylated Spirits		6,417 34	4,141 57	113 27
Commercial Feeding Stuffs		80 00		
Adulteration of Food Fees		75 00	188 65	
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses				
War Tax Revenue Stamps		27,640 18	9,574 97	1,209 71
War Tax Revenue, Transportation, etc	11,173 90	737 58	4,838 05	36 25
War Tax Fine				
Casual Revenue				
Totals	11,173 90	508,911 97	1,003,773 66	22,019 07
May—				
Excise		587,912 35	1,184,225 91	25,287 70
" Seizures		100 00	619 52	
Ferries		27 00		
Weights and Measures Inspection		3,240 70	1,908 05	214 05
" " Seizures				
Gas Inspection		2,967 75	1,467 55	38 40
Gas Seizures				
Electric Light Inspection		2,639 40	1,990 15	168 15
Law Stamps (Supreme Court)		367 40		
" (Exchequer Court)		447 00		
" (Yukon Territorial Court)				
Patent Medicines Fees		56 00	16 00	3 00
" Fines				
Fertilizers Fees		11 00		
" Fines				
Methylated Spirits		6,915 40	3,421 93	75 24
Commercial Feeding Stuffs				
Adulteration of Food Fees		50 25	17 25	
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses	380 90			
War Tax Revenue Stamps		35,903 92	10,674 41	2,240 75
War Tax Revenue, Transportation, etc	11,487 66	16,771 97	132,835 66	193 90
War Tax Fine		52 10		
Casual Revenue		14 00		
Totals	11,868 56	657,476 24	1,337,176 43	28,221 19
June—				
Excise		571,838 93	1,141,529 15	24,564 71
" Seizures		209 00	206 85	
Ferries		50 00		
Weights and Measures Inspection		3,709 03	2,887 55	341 70
Gas Inspection		2,502 55	2,014 15	54 00
Gas Seizures				
Electric Light Inspection		2,226 30	2,614 95	119 40
Law Stamps (Supreme Court)		234 40		

on account of Inland Revenues, during the year ended March 31, 1917.

Nova Scotia.	Prince Edward Island.	Manitoba.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
19,228 44	1,768 80	78,216 42	38,738 42	13,301 68	39,462 71	701 34	1,667,060 72
.....	.....	.....	.....	.....	.....	.....	1,264 37
.....	.....	.....	.....	.....	.....	.....	130 00
.....	.....	.....	.....	.....	.....	.....	1,468 35
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	31 50	.....	263 95
.....	.....	.....	.....	.....	.....	.....	60 00
.....	.....	.....	.....	.....	93 60	.....	790 65
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
1 00	1 00	5 00	4 00	5 00	6 00	.....	143 00
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	11 00
.....	.....	.....	.....	.....	.....	.....	25 00
.....	.....	.....	.....	.....	.....	.....	10 791 95
119 77	.....	.....	.....	.....	.....	.....	80 00
.....	.....	.....	.....	.....	25 00	.....	288 65
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
1,116 03	139 36	6,235 50	2,992 09	2,658 07	3,310 77	15 00	54,891 68
64 50	.....	550 00	.....	.....	149 85	.....	17,550 13
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	2 55	.....	2 55
20,529 74	1,909 16	85,006 92	41,734 51	15,964 75	43,081 98	716 34	1,754,822 00
21,069 04	2,089 30	98,834 88	42,220 66	30,861 04	67,691 20	272 58	2,060,464 66
.....	.....	.....	.....	.....	.....	.....	719 52
.....	.....	.....	.....	.....	.....	.....	27 00
170 30	18 70	830 90	241 40	1,401 80	147 35	6 30	8,179 55
.....	.....	.....	.....	.....	.....	.....	.....
69 25	6 00	149 30	47 80	.....	279 75	.....	5,025 80
.....	.....	.....	.....	.....	.....	.....	.....
59 70	8 70	117 75	253 15	138 45	996 15	.....	6,371 60
.....	.....	.....	.....	.....	.....	.....	367 40
.....	.....	.....	.....	.....	.....	.....	447 00
.....	.....	.....	.....	.....	.....	115 10	115 10
1 00	1 00	4 00	.....	2 00	4 00	.....	87 00
.....	.....	.....	.....	.....	.....	.....	.....
4 00	.....	.....	.....	.....	1 00	.....	16 00
.....	.....	.....	.....	.....	30 00	.....	30 00
.....	.....	.....	.....	.....	.....	.....	10,412 57
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	10 00	.....	77 50
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	380 90
1,998 80	194 50	7,903 35	3,815 94	3,214 81	5,552 87	24 00	71,523 35
1,074 56	.....	330 00	23 00	9 00	1,530 10	.....	164,455 85
.....	.....	.....	5 00	.....	50 00	.....	107 10
.....	.....	.....	.....	.....	.....	.....	14 00
24,446 65	2,318 20	108,370 18	46,606 95	35,627 10	76,292 42	417 98	2,328,821 90
16,439 23	2,154 52	69,579 25	42,224 07	28,782 84	60,498 06	664 78	1,958,275 54
.....	.....	.....	.....	.....	51 00	.....	466 85
.....	.....	.....	.....	.....	.....	.....	50 00
347 95	21 00	959 70	343 95	1,776 95	411 60	9 75	10,809 18
35 50	6 00	257 55	91 80	.....	311 00	.....	5,272 55
86 25	3 00	267 30	136 55	71 55	917 40	.....	6,442 70
.....	.....	.....	.....	.....	.....	.....	234 40
.....	.....	.....	.....	.....	.....	.....	498 00

No. 13.—Amounts deposited monthly to the credit of the Receiver General,

——	General.	Ontario.	Quebec.	New Brunswick.
	$ cts.	$ cts.	$ cts.	$ cts.
June—Con.				
Law Stamps (Exchequer Court)		408 00		
" (Yukon Territorial Court)				
Patent Medicines Fees		36 00	18 00	1 00
" " Fines				
Fertilizers Fees		2 00	1 00	
" Fines		8 00	20 00	
Methylated Spirits		9,553 88	4,549 66	
Commercial Feeding Stuffs		8 00		
Adulteration of Food Fees		145 00	85 00	5 00
Electrical Standard of Laboratory		25 93		
Electric Light Export Licenses				
Testing Milk Glasses	368 50			
War Tax Revenue Stamps		34,918 28	12,501 61	1,982 91
War Tax Revenue, Transportation, etc.	6,132 23	16,695 87	122 00	
War Tax Fine			750 00	
Casual Revenue	1 40	7 00	65 94	
Totals	6,502 13	649,578 17	1,167,365 86	27,068 72
July—				
Excise		544,214 13	1,221,299 57	23,754 90
" Seizures		100 00	240 20	150 00
Ferries		110 00		
Weights and Measures Inspection		6,718 62	3,916 50	585 20
" " Seizures				
Gas Inspection		2,788 95	975 90	38 40
Gas Seizures				
Electric Light Inspection		2,279 25	1,973 55	124 80
Law Stamps (Supreme Court)				
" (Exchequer Court)		490 00		
" (Yukon Territorial Court)				
Patent Medicines Fees		26 00	19 00	1 00
Fertilizers Fees		2 00	3 00	
" Fines				
Methylated Spirits		9,101 77	5,205 04	101 09
Commercial Feeding Stuffs		2 00	16 00	
" " Fines				
Adulteration of Food Fees		309 40	111 00	
Electrical Standard of Laboratory		16 00		
Electric Light Export Licenses		100 00	25 00	25 00
Testing Milk Glasses				
War Tax Revenue Stamps		33,672 92	10,576 09	2,265 54
War Tax Revenue, Transportation, etc.	14,702 98	873 95	5,586 11	146 65
War Tax Fine		100 00	101 00	
Casual Revenue		0 50		
Totals	14,702 98	600,905 49	1,250,047 96	27,192 58
August—				
Excise		625,251 14	1,331,287 22	23,203 62
" Seizures		50 00	75 00	
Ferries		156 00		
Weights and Measures Inspection		4,334 65	3,869 00	737 20
" " Seizures				
Gas Inspection		2,684 65	868 75	48 60
Gas Seizures				
Electric Light Inspection		2,699 45	1,470 15	118 50
Law Stamps (Supreme Court)				
" (Exchequer Court)		645 90		
" (Yukon Territorial Court)				
Patent Medicines Fees		24 00	11 00	
" " Fines			1 00	
Fertilizers Fees		4 00		
" Fines				
Methylated Spirits		9,514 25	3,658 72	71 68
Commercial Feeding Stuffs		2 00		

on account of Inland Revenues, during the year ended March 31, 1917.—*Con.*

Nova Scotia.	Prince Edward Island.	Manitoba.	Alberta.	Saskatchewan.	British Columbia	Yukon.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
						150 75	150 75
2 00		3 00			1 00		61 00
							3 00
							28 00
83 35		37 50			82 85		14,307 24
							8 00
2 00			5 00	8 00	68 00		318 00
					2 50		28 43
							368 50
2,323 01	244 59	7,532 68	4,326 33	3,099 82	5,893 74	74 75	72,897 72
99 60				3 00	6 00		23,058 70
			49 85	50 00			849 85
			25 00				99 34
19,418 89	2,429 11	78,636 98	47,202 55	33,792 16	68,243 15	900 03	2,094,137 75
11,587 01	1,862 64	41,518 00	19,829 36	31,048 60	73,815 56	1,217 97	1,970,147 74
							490 20
							110 00
437 45	33 00	863 45	363 45	2,823 00	273 05	1 55	16,015 27
			10 00				10 00
68 80	8 25	214 30	120 60		282 55		4,497 75
114 30	63 45	197 85	79 20	223 20	1,269 45		6,325 05
							490 00
						264 30	264 30
3 00			1 00	1 00			51 00
					7 00		12 00
153 31		80 09			238 68		14,879 98
							18 00
2 00							422 40
							16 00
			50 00		50 00		250 00
1,978 57	194 93	7,700 59	3,925 68	3,853 53	5,206 79	102 42	69,477 06
226 94		2,508 54	658 24		4,045 90		28,749 31
			85 00				286 00
		22 95					23 45
14,571 38	2,162 27	53,105 77	25,122 53	37,949 33	85,188 98	1,586 24	2,112,535 51
11,016 00	2,056 28	40,429 65	18,233 52	41,671 00	71,169 64	837 81	2,165,155 88
							125 00
							156 00
742 50	55 40	857 00	977 55	2,713 15	262 65	114 60	14,663 70
41 30	5 50	242 25	76 60		257 70		4,225 35
221 10	19 80	183 45	211 35	24 75	694 60		5,643 15
							645 90
						337 35	337 35
		1 00	1 00	1 00			38 00
							1 00
							4 00
		39 89			201 49		13,486 03
							2 00

No. 13.—Amounts deposited monthly to the credit of the Receiver General, on

——	General.	Ontario.	Quebec.	New Brunswick.
	$ cts.	$ cts.	$ cts.	$ cts.
August—Con.				
Commercial Feeding Stuffs Fines				
Adulteration of Food Fees		215 25	24 00	
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses				
War Tax Revenue Stamps		30,989 36	9,892 49	1,979 54
War Tax Revenue, Transportation, etc	15,157 98	11,911 16	162,990 78	247 15
War Tax Fine		50 00		
Casual Revenue	101 47			
Totals	15,259 45	688,531 81	1,514,148 11	26,406 29
September—				
Exeise		646,409 96	1,308,502 86	27,067 83
" Seizures			443 58	
Ferries		180 00		
Weights and Measures Inspection		3,883 38	3,553 55	576 29
" " Seizures				
Gas Inspection		2,460 95	951 30	50 40
Gas Seizures				
Electric Light Inspection		2,014 00	1,004 35	46 20
Law Stamps (Supreme Court)				
" (Exchequer Court)		41 10		
" (Yukon Territorial Court)				
Patent Medicines Fees	7 00	12 00	4 00	
" " Fines				
Fertilizers Fees	4 6 00	2 00	2 00	24 00
" Fines				
Methylated Spirits		9,561 88	3,424 11	76 16
Commercial Feeding Stuffs	5 00	2 00	5 00	
" " Fines				
Adulteration of Food Fees		117 10	205 00	
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses	172 35			
War Tax Revenue Stamps		36,118 48	12,473 02	2,186 46
War Tax Revenue, Transportation, etc	4,942 00	760 50	5 00	187 30
War Tax Fine				
Casual Revenue		1 56		
Totals	5,172 35	701,564 91	1,330,573 77	30,214 64
October—				
Exeise		339,164 24	1,390,688 04	27,527 82
" Seizures		150 00	311 21	50 00
Ferries		150 00		
Weights and Measures Inspection		5,013 67	2,828 05	340 11
" " Seizures				
Gas Inspection		2,663 70	940 50	52 60
Gas Seizures				
Electric Light Inspection		2,268 90	1,187 08	168 90
Law Stamps (Supreme Court)		927 75		
" (Exchequer Court)		223 50		
" (Yukon Territorial Court)				
Patent Medicines Fees	3 00	5 00	8 00	
" Fines				
Fertilizers Fees	24 00			
" Fines				
Methylated Spirits		8,947 94	3,728 83	78 29
Commercial Feedings Stuffs	11 00	4 00		
Adulteration of Food Fees		173 00	161 00	
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses				
War Tax Revenue Stamps		33,960 73	11,556 89	2,109 56
War Tax Revenue, Transportation, etc	9,472 36	1,326 20	7,103 00	

account of Inland Revenues, during the year ended March 31, 1917—*Continued*.

Nova Scotia.	Prince Edward Island.	Manitoba.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.	cts.	$ cts.	$ cts.	$ cts.
		25 00		60 00			324 25
					3 75		3 75
2,547 81	226 16	6,373 14	3,620 22	3,690 80	6,261 56	119 63	65,700 71
1,742 86	24 50	756 30			1,444 00	51 35	194,326 08
				149 56			199 56
							101 47
16,311 57	2,387 64	48,907 68	23,120 24	48,310 26	80 295 39	1,460 74	2,465,139 18
11,975 02	1,968 06	56,802 99	16,023 01	39,680 56	77,758 38	889 63	2,187,078 30
					50 00		493 58
							180 00
227 10	79 95	1,469 45	1,435 85	2,996 50	250 45		14,472 52
46 90		233 90	156 85		253 50		4,153 80
98 85		185 05	312 60	90 00	676 70		4,427 75
							41 10
						365 25	365 25
				1 00			24 00
2 00							76 00
					116 13		13 178 28
			5 00				17 00
78 00	10 00	100 00		2 00			512 10
							172 35
2,124 99	189 22	5,186 80	3,847 33	3,461 94	4,656 60	91 33	70,336 17
		34 30				41 05	5,970 15
				59 90			59 90
							1 56
14,552 86	2,247 23	64,012 49	21,780 64	46,291 90	83,761 76	1,387 26	2,301,559 81
12,237 41	2,253 70	76,953 62	12,540 51	51,761 08	89,495 92	1,208 63	2,003,830 97
							511 21
							150 00
553 30	88 30	2,115 20	1,098 45	2,304 70	400 30		14,742 08
37 65	5 50	231 40	89 05		230 35		4,250 75
247 50	7 20	229 35	347 10	255 60	686 70		5,398 33
							927 75
							223 50
						303 25	303 25
		4 00			3 00		23 00
		4 00					28 00
155 82		114 36					13,025 24
							15 00
		35 00	50 00				419 00
1,891 39	206 52	7,521 90	3,513 35	3,954 19	5,082 62	81 00	69,878 15
267 25		5,072 40		3 00	2,878 65		26,122 86

No. 13.—Amounts deposited monthly to the credit of the Receiver General, on

——	General.	Ontario.	Quebec.	New Brunswick.
	$ cts.	$ cts.	$ cts.	$ cts.
October—Con.				
War Tax Fine		770 00	800 00	
Casual Revenue			10 94	
Totals	9,510 36	395,748 63	1,419,323 54	30,327 28
November—				
Excise		357,185 21	1,525,122 62	29,891 45
" Seizures		195 00	180 80	
Ferries				
Weights and Measures Inspection		3,448 93	1,976 90	279 95
" " Seizures				
Gas Inspection		2,397 95	1,082 40	71 20
Gas Seizures				
Electric Light Inspection		2,765 70	1,757 80	121 65
Law Stamps (Supreme Court)		209 50		
" (Exchequer Court)		747 00		
" (Yukon Territorial Court)				
Patent Medicines Fees	6 00	14 00	1 00	
" Fines				
Fertilizers Fees	26 00	19 00		4 00
" Fines				
Methylated Spirits		10,836 95	4,767 61	110 83
Commercial Feedings Stuffs	10 00	84 00	20 00	
Adulteration of Food Fees		349 50	276 00	
Electrical Standard of Laboratory		9 25		
Electric Light Export Licenses				
Testing Milk Glasses				
War Tax Revenue Stamps		37,572 73	13,276 26	2,176 23
War Tax Revenue, Transportation, etc	21,544 22	34,294 37	238,092 14	38,258 08
War Tax Fine		150 00	400 00	
Casual Revenue		3 10	2 00	
Totals	21,586 22	450,282 19	1,786,955 53	70,913 39
December—				
Excise		391,563 26	1,549,251 76	33,972 95
" Seizures		225 00	476 70	
Ferries		11 00		
Weights and Measures Inspection		4,136 90	1,413 10	167 90
" " Seizures			5 00	
Gas Inspection		2,673 15	1,125 95	84 80
Gas Seizures				
Electric Light Inspection		2,971 50	1,716 25	132 75
Law Stamps (Supreme Court)		63 70		
" (Exchequer Court)		303 00		
" (Yukon Territorial Court)				
Patent Medicines Fees	1 00	2 00	1 00	1 00
" " Fines		25 00		
Fertilizers Fees	59 00	70 00	17 00	17 00
" Fines				
Methylated Spirits		8,558 25	4,293 28	101 79
Commercial Feeding Stuffs	34 00	40 00	10 00	
Adulteration of Food Fees		98 75		
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses				
War Tax Revenue Stamps		40,193 28	16,840 71	2,305 25
War Tax Revenue, Transportation, etc	7,686 90	29,315 30		213 30
War Tax Fine		52 00		
Casual Revenue		2 60		
Totals	7,780 90	480,304 49	1,575,150 75	36,996 74
January—				
Excise		378,710 05	1,441,834 05	27,946 56
" Seizures		170 00	520 10	

account of Inland Revenues, during the year ended March 31, 1917—*Continued.*

Nova Scotia.	Prince Edward Island.	Manitoba.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts.	$ cts.
.....	.....	.....	.....	100 00	.....	.....	1,670 00
.....	.....	.....	.....	.....	.....	.....	10 94
15,390 32	2,561 22	92,281 23	17,638 46	58,378 57	98,777 54	1,592 88	2,141,530 03
13,038 93	2,336 50	93,428 25	9,295 03	56,309 12	87,400 37	676 04	2,174,683 52
.....	.....	.....	.....	.....	.....	.....	375 80
232 75	81 30	1,836 05	777 55	2,615 55	380 75	10 80	11,640 53
26 30	5 50	281 05	63 70	.....	269 90	.....	4,198 00
10 00	.....	.....	.....	.....	.....	.....	10 00
242 10	10 80	190 35	187 50	119 40	433 80	.....	5,829 10
.....	.....	.....	.....	.....	.....	.....	209 50
.....	.....	.....	.....	.....	.....	.....	747 00
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1 00	.....	22 00
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	5 00	.....	5 00	.....	59 00
5 00	.....	.....	.....	.....	.....	.....	5 00
83 75	.....	39 89	.....	.....	118 06	.....	15,957 09
.....	.....	5 00	12 00	5 00	12 00	.....	148 00
48 00	.....	29 00	25 00	.....	5 00	.....	732 50
.....	.....	.....	.....	.....	4 50	.....	13 75
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
1,981 45	453 63	8,429 12	4,035 88	4,821 53	7,001 65	160 55	79,909 03
4,102 76	39 75	59 70	15 00	.....	1,133 96	.....	337,539 98
.....	.....	.....	.....	100 00	.....	.....	650 00
.....	.....	.....	.....	.....	.....	.....	5 10
19,771 04	2,927 48	104,298 41	14,416 66	63,970 60	96,765 99	847 39	2,632,734 90
20,088 91	2,248 72	132,750 29	13,382 06	59,643 71	97,800 33	190 47	2,300,892 46
50 00	.....	.....	.....	.....	.....	.....	751 70
.....	.....	.....	.....	.....	.....	.....	11 00
147 10	159 10	973 05	794 05	1,553 20	533 10	.....	9,877 50
.....	.....	.....	.....	.....	.....	.....	5 00
40 50	2 75	202 00	64 60	.....	231 60	.....	4,425 35
.....	.....	.....	.....	.....	.....	.....	.....
167 70	14 85	232 80	287 80	230 55	584 70	.....	6,338 90
.....	.....	.....	.....	.....	.....	.....	63 70
.....	.....	.....	.....	.....	.....	.....	303 00
.....	.....	.....	.....	.....	.....	203 55	203 55
2 00	.....	.....	1 00	1 00	.....	.....	9 00
.....	.....	.....	.....	.....	.....	.....	25 00
20 00	.....	.....	5 00	.....	22 00	.....	210 00
.....	.....	.....	.....	.....	.....	.....	.....
71 79	.....	.....	.....	.....	177 91	.....	13,203 02
.....	.....	5 00	10 00	.....	15 00	.....	114 00
20 00	.....	7 00	75 00	.....	5 00	.....	205 75
.....	.....	.....	.....	.....	1 25	.....	1 25
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
2,615 96	413 15	9,620 33	4,877 99	6,336 67	6,585 18	66 50	89,855 02
365 49	.....	4 30	35 65	15 00	1,422 45	48 10	39,106 49
.....	.....	150 00	.....	50 00	.....	.....	252 00
.....	.....	.....	.....	.....	.....	.....	2 60
23,589 45	2,838 57	143,944 77	19,533 15	67,830 13	107,378 52	508 62	2,465,856 29
13,918 24	1,726 24	113,154 90	10,047 83	15,917 39	102,326 57	225 91	2,105,807 74
120 00	.....	.....	.....	.....	250 00	.....	1,060 10

No. 13.—Amounts deposited monthly to the credit of the Receiver General, on

—	General.	Ontario.	Quebec.	New Brunswick
	$ cts.	$ cts.	$ cts.	$ cts.
January—Con.				
Ferries		110 00		
Weights and Measures Inspection		4,981 07	1,329 05	78 85
" " Seizures				
Gas Inspection		2,315 20	1,261 75	55 20
Gas Seizures				
Electric Light Inspection		2,361 90	1,127 85	174 90
" " Penalties				
Law Stamps (Supreme Court)		44 10		
" (Exchequer Court)		202 00		
" (Yukon Territorial Court)				
Patent Medicines Fees	25 00	31 00	15 00	1 00
" Fines				
Fertilizers Fees	83 00	35 00	5 00	
" Fines				
Methylated Spirits		8,120 17	6,949 51	39 55
Commercial Feeding Stuffs	12 00	49 00	4 00	
" " Fines				
Adulteration of Food Fees		70 00		6 00
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses	109 95			
War Tax Revenue Stamps		40,061 33	13,265 35	2,103 91
War Tax Revenue, Transportation, etc	18,937 72	974 22	6,343 93	49 10
War Tax Fine		206 00	100 00	
Casual Revenue		1 07		
Totals	19,167 67	438,442 11	1,472,755 59	30,455 07
February—				
Excise		324,078 69	1,255,632 84	26,177 90
" Seizures			1,445 04	
Ferries		50 00		
Weights and Measures Inspection		3,547 15	1,214 05	56 40
" " Seizures		20 00		
Gas Inspection		2,557 20	1,106 50	61 40
Gas Seizures				
Electric Light Inspection		3,036 35	878 82	125 10
" Penalties				
Law Stamps (Supreme Court)		315 00		
" (Exchequer Court)		304 50		
" (Yukon Territorial Court)				
Patent Medicines Fees	55 00	117 00	54 00	4 00
" " Fines				
Fertilizers Fees		9 00	2 00	
" Fines			3 00	
Methylated Spirits		14,407 87	7,573 03	42 81
Commercial Feedings Stuffs	11 00	7 00		
" " Fines				
Adulteration of Food Fees	86 00	221 00		
Electrical Standard of Laboratory				
Electric Light Export Licenses				
Testing Milk Glasses				
War Tax Revenue Stamps		36,820 73	10,732 86	1,918 44
War Tax Revenue, Transportation, etc	16,957 34	30,902 17	198,846 74	16,747 65
War Tax Fine		135 70	50 00	
Casual Revenue	291 93			17 78
Totals	17,401 27	416,308 36	1,477,759 88	45,151 48
March—				
Excise		408,486 04	1,411,505 50	34,998 84
" Seizures		133 50	315 79	
Ferries				
Weights and Measures Inspection		7,205 50	2,033 45	114 75
" " Seizures				
Gas Inspection		5,326 05	2,495 65	90 60

account of Inland Revenues, during the year ended March 31, 1917—*Continued.*

Nova Scotia.	Prince Edward Island.	Manitoba.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	Totals.
$ cts.	cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
.....	.....	.....	.....	.....	.....	.....	110 00
188 30	16 25	277 35	740 30	508 00	132 95	.....	8,252 12
.....	.....	.....	.....	.....	.....	.....	.....
37 50	.....	279 85	66 90	.....	302 25	.....	4,318 65
20 00	.....	.....	.....	.....	.....	.....	20 00
170 55	10 50	407 70	166 05	221 70	531 00	.....	5,172 15
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	44 10
.....	.....	.....	.....	.....	.....	.....	202 00
.....	.....	.....	.....	.....	.....	236 75	236 75
.....	.....	.....	.....	.....	1 00	.....	75 00
2 00	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
55 00	5 00	5 00	.....	.....	6 00	.....	194 00
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	38 75	.....	.....	39 16	.....	15,187 14
.....	.....	.....	10 00	5 00	.....	.....	80 00
.....	.....	.....	.....	.....	.....	.....	.....
2 00	.....	2 00	.....	.....	65 00	.....	145 00
.....	.....	.....	.....	.....	4 75	.....	4 75
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	109 95
2,388 38	314 67	8,008 74	4,669 31	4,341 06	7,658 83	60 30	82,871 88
94 76	.....	1,127 35	.....	.....	2,150 15	.....	29,677 23
50 00	.....	.....	.....	.....	.....	.....	356 00
.....	.....	.....	.....	.....	.....	.....	1 07
17,046 73	2,072 66	123,301 64	15,700 39	20,993 15	113,467 66	522 96	2,253,925 63
7,371 72	1,866 28	95,491 91	5,708 28	9,091 72	74,459 83	565 58	1,800,444 75
.....	.....	.....	.....	.....	.....	.....	1,445 04
.....	.....	.....	.....	.....	.....	.....	50 00
158 05	16 95	728 05	1,037 05	652 45	261 50	.....	7,671 65
.....	.....	.....	.....	.....	.....	.....	20 00
31 90	.....	230 60	63 70	.....	289 60	.....	4,340 90
.....	.....	.....	.....	.....	.....	.....	.....
249 75	6 60	347 70	156 75	106 40	707 40	.....	5,614 87
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	315 00
.....	.....	.....	.....	.....	.....	.....	304 50
.....	.....	.....	.....	.....	.....	193 75	193 75
7 00	1 00	4 00	3 00	3 00	13 00	.....	261 00
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	9 00	.....	20 00
.....	.....	.....	.....	.....	15 00	.....	18 00
37 01	.....	177 84	.....	.....	120 38	.....	22,358 94
.....	.....	.....	.....	.....	.....	.....	18 00
.....	.....	.....	.....	.....	.....	.....	.....
.....	200 00	.....	.....	83 00	110 00	.....	700 00
.....	.....	.....	.....	.....	20 50	.....	20 50
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
2,036 83	404 98	6,975 60	3,289 31	3,565 93	5,416 13	64 00	71,224 81
2,079 85	52 00	.....	41 00	17 00	1,002 85	.....	266,646 60
.....	.....	.....	.....	.....	.....	.....	185 70
.....	.....	.....	.....	.....	.....	.....	309 71
11,972 11	2,547 81	103,955 70	10,299 09	13,519 50	82,425 19	823 33	2,182,163 72
9,829 75	2,403 28	116,011 28	11,135 18	14,812 04	111,231 84	1,086 77	2,121,500 52
.....	.....	200 00	.....	.....	.....	.....	649 29
.....	.....	.....	.....	.....	.....	.....	.....
90 10	51 35	1,318 85	697 65	520 10	371 65	.....	12,403 40
.....	.....	.....	.....	.....	.....	.....	.....
78 00	.....	458 35	156 30	.....	489 55	.....	9,094 50

No. 13.—Amounts deposited monthly to the credit of the Receiver General, on

——	General.	Ontario.	Quebec.	New Brunswick.
	$ cts.	$ cts.	$ cts.	$ cts.
March—Con.				
Gas Seizures				
Electric Light Inspection		5,879 00	3,006 70	547 80
" Penalties				
Law Stamps (Supreme Court)		275 00		
" (Exchequer Court)		1,393 00		
" (Yukon Territorial Court)				
Patent Medicines Fees	189 00	275 00	98 00	9 00
" Fines				
Fertilizers Fees	20 00	24 00	2 00	
" Fines				
Methylated Spirits		14,938 79	10,621 94	198 36
Commercial Feeding Stuffs	5 00	10 00	10 00	
" " Fines				
Adulteration of Food Fees	67 00	262 00	287 00	
Electrical Standard of Laboratory		5 50		
Electric Light Export Licenses				
Testing Milk Glasses	363 05			
War Tax Revenue Stamps		49,665 82	15,893 87	2,993 31
War Tax Revenue, Transportation, etc	10,003 29	7,759 23	15,398 32	48 75
War Tax Fine		792 70	425 00	
Casual Revenue		0 50		
Totals	10,647 34	502,431 13	1,462,093 22	39,001 41

Recapitulation of Statement No. 13 showing

Excise		5,646,801 42	15,743,879 17	325,050 12
" Seizures		1,402 50	6,029 16	200 00
Ferries		974 00		
Weights and Measures Inspection		51,071 50	27,545 70	3,492 40
" " Seizures		20 00	5 00	
Gas Inspection		31,523 05	14,337 90	645 60
Gas Seizures		60 00		
Electric Light Inspection		31,709 35	18,857 10	1,848 15
" Penalties				
Law Stamps (Supreme Court)		2,436 85		
" (Exchequer Court)		5,205 00		
" (Yukon Territorial Court)				
Patent Medicines Fees	286 00	677 00	283 00	24 00
" " Fines		25 00	1 00	
Fertilizers Fees	258 00	184 00	37 00	45 00
" Fines		33 00	23 00	
Methylated Spirits		116,874 49	62,335 23	1,009 07
Commercial Feeding Stuffs	88 00	288 00	65 00	
" " Fines				
Adulteration of Food Fees	153 00	2,086 25	1,354 90	11 00
Electrical Standard of Laboratory		56 68		
Electric Light Export Licenses		100 00	25 00	25 00
Testing Milk Glasses	1,394 75			
War Tax Revenue Stamps		437,517 76	147,258 53	25,471 61
War Tax Revenue, Transportation, etc	148,198 58	152,322 52	772,161 73	56,128 13
War Tax Fine		2,308 50	2,626 00	
Casual Revenue	394 80	30 33	78 88	17 78
Totals	150,773 13	6,483,707 20	16,796,903 30	413,967 86

Inland Revenue Department,
Ottawa, July 2, 1917.

SESSIONAL PAPER No. 12

account of Inland Revenues, during the year ended March 31, 1917—*Concluded.*

Nova Scotia.	Prince Edward Island.	Manitoba.	Alberta.	Saskatchewan.	British Columbia.	Yukon.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
395 85	53 10	528 60	674 55	538 20	1,137 55		12,761 35
							275 00
							1,393 00
						98 20	98 20
13 00		15 00	5 00	7 00	13 00		624 00
5 00					14 00		65 00
		1,039 61			122 10		26,920 80
							25 00
7 00					25 00		648 00
			7 65				13 15
							363 05
3,575 91	480 57	10,350 45	5,781 49	4,237 52	8,488 69	84 80	101,552 43
			3 00		23 63		33,236 22
			50 00				1,267 70
							0 50
13,994 61	2,988 30	129,922 14	18,510 82	20,114 86	121,917 01	1,269 77	2,322,891 11

the Total Revenues for the Year ended March 31, 1917.

167,799 70	24,734 32	1,013,171 44	239,377 93	392,880 78	953,110 41	8,537 51	24,515,342 80
170 00		200 00			351 00		8,352 66
							974 00
3,294 90	621 30	12,229 05	8,507 25	19,865 40	3,425 35	143 00	130,195 85
			10 00				35 00
513 60	39 50	2,780 55	997 90		3,229 25		54,067 35
30 00							90 00
2,053 65	198 00	2,887 90	2,812 60	2,019 80	8,729 05		71,115 60
							2,436 85
							5,205 00
						2,268 25	2,268 25
31 00	3 00	36 00	15 00	21 00	42 00		1,418 00
							26 00
86 00	5 00	9 00	10 00		64 00		698 00
5 00					45 00		106 00
704 80		1,567 93			1,216 76		183,708 28
		10 00	37 00	10 00	27 00		525 00
159 00	210 00	198 00	155 00	153 00	313 00		4,793 15
			7 65		37 25		101 58
			50 00		50 00		250 00
							1,394 75
26,579 13	3,462 28	91,838 20	48,694 92	47,235 87	71,115 43	944 28	900,118 01
10,118 57	116 25	10,642 89	775 89	47 00	15,787 54	140 50	1,166,439 60
50 00		150 00	189 85	509 46	50 00		5,883 81
		22 95	25 00		2 55		572 29
211,595 35	29,389 65	1,135,743 91	301,665 99	462,742 31	1,057,595 59	12,033 54	27,056,117 83

J. U. VINCENT,
Deputy Minister.

8 GEORGE V, A. 1918

EXCISE

No. 14.—Comparative Statement

—		April.	May.	June.	July.	August.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Spirits	1915–16	535,048 79	564,066 96	561,672 59	523,961 29	588,209 50
	1916–17	773,720 59	839,806 95	720,277 47	632,892 89	819,063 65
Increase		238,671 80	275,739 99	158,604 88	108,931 60	230,854 15
Decrease		.....	.....	.....	.....	.....
Malt Liquor	1915–16	13,545 95	9,252 70	9,338 90	7,427 15	10,639 80
	1916–17	9,745 15	8,901 40	9,977 25	10,319 35	11,430 65
Increase		.....	.....	638 35	2,892 20	790 85
Decrease		3,800 80	351 30	.....	.....	.....
Malt	1915–16	276,846 38	270,832 14	276,498 72	218,242 79	227,187 03
	1916–17	221,535 78	272,515 29	258,381 60	245,147 80	290,597 43
Increase		.....	1,683 15	.....	26,905 01	63,410 40
Decrease		55,310 60	.....	18,117 12	.....	.....
Tobacco	1915–16	739,502 08	866,222 37	901,712 73	914,467 30	873,903 94
	1916–17	860,613 58	885,428 86	901,503 69	964,182 24	1,061,603 92
Increase		121,111 50	19,206 49	.....	49,714 94	187,699 98
Decrease		.....	.....	209 04	.....	.....
Cigars	1915–16	49,537 05	48,300 62	51,967 67	54,693 72	55,341 18
	1916–17	54,678 52	57,062 95	62,253 62	60,752 30	66,803 98
Increase		5,141 47	8,762 33	10,285 95	6,058 58	11,462 80
Decrease		.....	.....	.....	.....	.....
Manufactures in Bond	1915–16	10,749 16	6,781 38	7,229 36	9,391 15	11,779 09
	1916–17	11,133 55	11,429 06	11,225 42	7,966 78	13,308 04
Increase		384 39	4,647 68	3,996 06	.....	1,528 95
Decrease		.....	.....	.....	1,424 37	.....
Acetic Acid	1915–16	281 24	386 58	453 04	1,013 59	969 61
	1916–17	846 78	1,315 55	.....	1,316 41	1,095 35
Increase		565 54	928 97	.....	302 82	125 74
Decrease		.....	.....	453 04	.....	.....
Seizures	1915–16	296 92	475 00	506 50	737 70	790 06
	1916–17	1,371 87	716 02	440 10	382 95	205 00
Increase		1,074 95	241 02	.....	.....	.....
Decrease		.....	.....	66 40	354 75	585 06
Other Receipts	1915–16	17,026 45	4,475 87	6,407 24	5,601 00	2,561 86
	1916–17	18,700 72	6,392 31	6,220 72	3,391 98	11,242 55
Increase		1,674 27	1,916 44	.....	.....	8,680 69
Decrease		.....	.....	186 52	2,209 02	.....
Total Revenue	1915–16	1,642,834 02	1,770,793 62	1,815,786 75	1,735,535 69	1,771,382 07
	1916–17	1,952,346 54	2,083,568 39	1,970,279 87	1,926,352 70	2,275,350 57
Total Increase		309,512 52	312,774 77	154,493 12	190,817 01	503,968 50
" Decrease		.....	.....	.....	.....	.....

Inland Revenue Department,
Ottawa, July 2, 1917.

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REVENUES.

of Receipts for 1915-16 and 1916-17.

September.	October.	November.	December.	January.	February.	March.	April.
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
684,848 63	732,593 24	906,863 89	1,139,217 67	745,409 07	793,896 43	925,286 62	8,701,074 68
848,287 62	822,347 00	920,603 93	1,161,752 59	947,304 73	695,981 40	698,527 73	9,880,566 55
163,438 99	89,753 76	13,740 04	22,534 92	201,895 66	.....	.....	1,179,491 87
.....	.....	.....	.....	.....	97,915 03	226,758 89	.....
8,503 80	10,725 15	6,608 25	6,731 60	4,316 85	4,640 70	6,048 60	97,779 45
11,641 35	12,587 55	7,426 05	7,822 20	4,040 55	5,280 30	10,043 55	109,215 35
3,137 55	1,862 40	817 80	1,090 60	.....	639 60	3,994 95	11,435 90
.....	.....	.....	.....	276 30	.....	.....	.....
220,619 66	177,784 38	193,004 67	185,989 06	206,073 39	203,606 76	232,614 65	2,689,299 63
197,782 08	154,767 69	152,112 21	136,112 07	147,689 34	133,735 68	157,525 41	2,367,902 38
.....	.....	.....	.....	.....	.....	.....	.....
22,837 58	23,016 69	40,892 46	49,876 99	58,384 05	69,871 08	75,089 24	321,397 25
868,028 46	822,744 37	929,411 97	863,877 97	734,615 64	816,494 49	891,802 46	10,222,783 78
982,648 53	943,276 44	1,026,293 46	878,911 34	906,303 13	916,398 87	869,938 46	11,197,102 52
114,620 07	120,532 07	96,881 49	15,033 37	171,687 49	99,904 38	.....	974,318 74
.....	.....	.....	.....	.....	.....	21,864 00	.....
57,867 52	57,080 45	63,220 29	58,251 86	42,706 33	46,627 37	49,563 77	635,157 83
62,461 36	66,626 62	71,332 35	62,857 15	48,836 55	53,434 50	63,115 36	730,215 26
4,593 84	9,546 17	8,112 06	4,605 29	6,130 22	6,807 13	13,551 59	95,057 43
.....	.....	.....	.....	.....	.....	.....	.....
14,764 04	12,001 83	9,723 45	4,241 29	6,748 21	5,621 10	6,782 18	105,812 24
15,642 83	11,718 04	7,418 86	4,917 93	2,065 54	5,292 78	8,289 96	110,403 79
878 79	.....	.....	676 64	.....	.....	1,507 78	4,596 55
.....	283 79	2,304 59	.....	4,682 67	328 32	.....	.....
1,254 41	1,153 83	721 47	921 22	.....	352 07	743 08	8,250 14
741 27	515 11	1,127 85	354 25	184 47	.....	552 35	8,049 39
.....	.....	406 38	.....	184 47	.....	.....	.....
513 14	638 72	.....	566 97	.....	352 07	190 73	200 75
1,272 14	550 00	1,439 70	1,130 20	1,061 15	1,093 17	996 85	10,349 39
468 58	646 21	365 80	971 80	704 20	1,570 84	509 29	8,352 66
.....	96 21	.....	.....	.....	477 67	.....	.....
803 56	.....	1,073 90	158 40	356 95	.....	487 56	1,996 73
2,944 05	4,186 11	5,616 39	6,353 42	5,814 73	10,317 47	8,944 35	80,248 94
4,338 38	11,168 22	7,402 92	13,729 71	6,206 14	14,131 14	10,632 91	113,548 70
1,394 33	6,982 11	1,786 53	7,367 29	391 41	3,813 67	1,688 56	33,299 76
.....	.....	.....	.....	.....	.....	.....	.....
1,860,102 71	1,818,819 36	2,116,610 08	2,266,714 29	1,746,745 37	1,882,649 56	2,122,782 56	22,550,756 08
2,124,012 00	2,023,652 88	2,194,083 43	2,267,420 04	2,063,334 65	1,825,825 51	1,819,135 02	24,525,361 60
263,909 29	204,833 52	77,473 35	705 75	316,589 28	.....	.....	2,335,077 11
.....	.....	.....	.....	.....	56,824 05	303,647 54	360,471 59

J. U. VINCENT,
Deputy Minister.

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917.

EXCISE.

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Spirits.	1916.			$ cts.	$ cts.
Can. Bank of Commerce for A. L. Howard	May 27	Sherbrooke	R.S., Cap. 51, Sec. 254	18,033 01	
N. C. Polson & Co	June 13	Kingston	" 51 " 254	68 47	
Parke, Davis & Co	" 13	Windsor	" 51 " 254	256 25	
N. C. Polson & Co	" 29	Kingston	" 51 " 254	124 59	
"	July 27	"	" 51 " 254	166 75	
Parke, Davis & Co	" 27	Windsor	" 51 " 254	97 49	
"	Aug. 21	"	" 51 " 254	541 39	
N. C. Polson	Sept. 23	Kingston	" 51 " 254	52 05	
Parke, Davis & Co	Oct. 5	Walkerville	" 51 " 254	201 49	
J. S. Hamilton & Co	" 13	Brantford	" 51 " 254	144 00	
J. J. Heney	" 17	Prescott	" 51 " 254	9,874 31	
Parke, Davis & Co	Nov. 2	Walkerville	" 51 " 254	649 01	
N. C. Polson & Co	" 15	Kingston	" 51 " 254	154 30	
"	Dec. 20	"	" 51 " 254	60 00	
Parke, Davis & Co	" 27	Walkerville	" 51 " 254	76 56	
	1917.				
J. S. Hamilton Co	Jan. 18	Brantford	" 51 " 254	76 80	
N. C. Polson & Co	" 25	Kingston	" 51 " 254	200 08	
Parke, Davis & Co	" 25	Walkerville	" 51 " 254	1,170 32	
J. S. Hamilton & Co	Mar. 3	Brantford	" 51 " 254	46 80	
N. C. Polson & Co	" 20	Kingston	" 51 " 254	212 44	
Parke, Davis & Co	" 20	Walkerville	" 51 " 254	302 06	
N. C. Polson & Co	May 4	Kingston	" 51 " 254	221 06	
Hiram Walker & Son, Ltd	" 5	Walkerville	" 51 " 254	80 98	
N. C. Polson & Co	" 22	Kingston	" 51 " 254	94 81	
Parke, Davis & Co	" 22	Walkerville	" 51 " 254	206 42	
					33,111 44
Malt.					
Thos. F. White	May 20	St. Catharines	R.S., Cap. 51, Sec. 254	691 40	
Taylor & Bate	" 20	"	" 51 " 254	1,314 00	
Crambrook Brewing Co	" 20	Vancouver	" 51 " 254	37 50	
Fernie Foot Steele Brewing Co.	" 20	"	" 51 " 254	787 25	
Frank Hartinger	" 20	"	" 51 " 254	9 00	
The Imperial Brewing Co	" 20	"	" 51 " 254	135 14	
The Elk Valley Brewing Co	" 20	"	" 51 " 254	287 25	
The Nelson Brewing Co	" 20	"	" 51 " 254	249 00	
Nels Nelson	" 20	"	" 51 " 254	435 00	
The Phoenix Brewing Co	" 20	"	" 51 " 254	180 22	
The Nelson Brewing Co	" 20	"	" 51 " 254	42 00	
The Enterprise Brewing Co	" 20	"	" 51 " 254	113 26	
The Le Roe Brewing Co., Ltd.	" 20	"	" 51 " 254	176 17	
August Mueller	" 20	"	" 51 " 254	300 00	
The Canada B. & W. Co., Ltd.	" 20	"	" 51 " 254	2,886 31	
The Union Brewing Co., Ltd.	" 20	Victoria	" 51 " 254	435 00	
Silver Spring Brewing, Ltd	" 20	"	" 51 " 254	1,020 00	
Victoria Phoenix Brewing Co., Ltd	" 20	"	" 51 " 254	1,500 00	
Blairmore B. M. Co	" 22	Calgary	" 51 " 254	18 37	
National Breweries Co., Reg. No. 7	" 23	Montreal	" 51 " 254	351 00	
Hoeschen Wentzler Brewing Co., Reg. No. 3	" 23	Moosejaw	" 51 " 254	54 00	
Canada B. & M., Co., Ltd	" 23	Vancouver	" 51 " 254	168 00	
H. Corby Distilleries Co., Ltd	June 9	Montreal	" 51 " 254	9,020 11	
E. L. Drewry, Ltd	" 9	Winnipeg	" 51 " 254	216 00	
Westminster Brewery, Ltd	" 15	Vancouver	" 51 " 254	105 78	
Canada B. & M. Co., Ltd	" 15	"	" 51 " 254	1,176 00	
The National Breweries, Ltd., Reg. No. 7	" 27	Montreal	" 51 " 254	351 00	
H. Corby Distillery Co., Ltd.	" 27	"	" 51 " 254	6,714 46	

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No. 15.—REFUNDS of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Malt—Continued.	1916.			$ cts.	$ cts.
The National Breweries, Ltd., Reg. No. 3	July 21	Montreal	R.S., Cap. 51, Sec. 254	360 00	
The National Breweries, Ltd., Reg. No. 7	" 21	"	" 51 " 254	468 00	
Westminster Brewery, Ltd	" 21	Vancouver	" 51 " 254	108 00	
Canada B. & M. Co., Ltd	" 21	"	" 51 " 254	1,512 00	
The Victoria Phoenix Brewing Co., Ltd	" 21	Victoria	" 51 " 254	324 00	
Veronica Schwan	" 25		" 51 " 254	124 50	
Heisz & Fiede	" 25		" 51 " 254	234 00	
J. C. Huether	" 25	Owen Sound	" 51 " 254	293 64	
Estate late C. Eaton	" 25	"	" 51 " 254	102 65	
John Arscott	" 25	"	" 51 " 254	102 60	
Bowie & Co's Brewery, Ltd	" 25	Prescott	" 51 " 254	180 00	
H. Corby Distillery Co., Ltd.	" 27	"	" 51 " 254	6,676 95	
National Breweries, Ltd., Reg. No. 7	Aug. 5	Montreal	" 51 " 254	61 98	
Frontenac Breweries, Ltd., Reg. No. 10	" 8	"	" 51 " 254	804 00	
Vancouver, Pickle & Co	" 15	Vancouver	" 51 " 254	18 00	
Westminster Brewery, Ltd	" 17	New Westminster	" 51 " 254	108 00	
H. Corby Distillery Co., Ltd.	" 17	Thurlow	" 51 " 254	12,567 93	
Canadian B. & M. Co., Ltd	" 21	Vancouver	" 51 " 254	1,767 42	
J. P. Wiser & Sons, Ltd	" 21	Prescott	" 51 " 254	6,754 11	
National Breweries, Ltd	" 21	Montreal	" 51 " 254	468 00	
D. Keith & Son	" 24	Halifax	" 51 " 254	436 86	
Wilson, Lytle, Badgeron Co., Ltd	Sept. 22	Toronto	" 51 " 254	1,392 84	
The National Breweries, Ltd., Reg. No. 7	" 22	Montreal	" 51 " 254	585 00	
Westminster Brewery, Ltd	" 22	New Westminster	" 51 " 254	108 00	
The Canadian B. & M. Co., Ltd	" 22	Vancouver	" 51 " 254	1,699 41	
H. Corby Distillery Co., Ltd	Oct. 5	Thurlow	" 51 " 254	4,973 25	
Joseph Hamilton	" 6	London	" 51 " 254	26 33	
The Koremann Brewery, Ltd.	" 6	Toronto	" 51 " 254	5 40	
National Breweries, Ltd., Reg. No. 7	" 12	Montreal	" 51 " 254	174 57	
H. Corby Distillery Co., Ltd.	" 12	Thurlow	" 51 " 254	3,979 34	
Frontenac Breweries, Ltd	" 12		" 51 " 254	9 36	
The Empire Brewing Co., Ltd	" 13	Brandon	" 51 " 254	90 00	
Frontenac Breweries, Ltd., Reg. No. 10	Oct. 17	Montreal	" 51 " 254	402 00	
The National Breweries, Ltd., Reg. No. 7	" 17	"	" 51 " 254	468 00	
E. L. Drewry, Ltd	" 17	Winnipeg	" 51 " 254	387 00	
B. C. Breweries, Ltd	" 17	Vancouver	" 51 " 254	1,776 72	
Vancouver Pickle Co	" 18	"	" 51 " 254	169 50	
The National Breweries, Ltd., Reg. No. 3	" 19	Montreal	" 51 " 254	540 00	
Frontenac Breweries	Nov. 2	"	" 51 " 254	22 98	
National Breweries, Ltd., Reg. No. 7	" 2	"	" 51 " 254	122 25	
E. L. Drewry	" 11	Winnipeg	" 51 " 254	213 00	
Westminster Brewery, Ltd	" 11	New Westminster	" 51 " 254	108 00	
The Victoria Phoenix Brewing Co., Ltd	" 11	Victoria	" 51 " 254	432 00	
The National Breweries, Ltd., Reg. No. 3	" 14	Montreal	" 51 " 254	90 00	
The National Breweries, Ltd., Reg. No. 7	" 14	"	" 51 " 254	468 00	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Malt—Continued.	1916.			$ cts.	$ cts.
British Columbia Breweries, Ltd.	Nov. 14	Vancouver	R.S., Cap. 51, Sec. 254	2,100 00	
A. Keith & Son	" 15	Halifax	" 51 " 254	282 45	
Geo. Cloos	" 17	St. Thomas	" 51 " 254	207 69	
A. Keith & Son	" 27	Halifax	" 51 " 254	1,911 30	
Wilson, Lytle, Badgeron Co., Ltd.	Dec. 18	Toronto	" 51 " 254	1,430 40	
The National Breweries, Ltd., Reg. No. 7	" 20	Montreal	" 51 " 254	351 00	
The Frontenac Breweries, Ltd. Reg. No. 10	" 20	"	" 51 " 254	402 00	
Westminster Brewery, Ltd.	" 20	New Westminster	" 51 " 254	54 00	
Canadian B. & M. Co., Ltd.	" 20	Vancouver	" 51 " 254	1,354 44	
T. H. Carling	" 20	London	" 51 " 254	51 33	
	1917.				
H. Corby Distillery Co., Ltd.	Jan. 15	Thurlow	" 51 " 254	10,915 24	
W. R. Holliday	" 18	Guelph	" 51 " 254	2 05	
Wilson, Lytle, Badgeron Co., Ltd.	" 18	Toronto	" 51 " 254	1,572 84	
The National Breweries, Ltd. (Dawes)	" 18	Montreal	" 51 " 254	74 28	
Frontenac Breweries, Ltd.	" 18	"	" 51 " 254	16 80	
Canadian B. & M. Co., Ltd.	" 18	Vancouver	" 51 " 254	107 45	
The National Breweries, Ltd., Reg. No. 3	" 19	Montreal	" 51 " 254	85 50	
The National Breweries, Ltd., Reg. No. 7	" 19	"	" 51 " 254	222 30	
Westminster Brewery, Ltd.	" 19	New Westminster	" 51 " 254	102 60	
Canadian B. & M. Co., Ltd.	" 19	Vancouver	" 51 " 254	1,457 23	
The Victoria Phoenix Brewing Co., Ltd.	" 19	Victoria	" 51 " 254	410 40	
H. Corby Distillery Co., Ltd.	Feb. 5	Thurlow	" 51 " 254	8,506 85	
Bowie & Co's Brewery, Ltd.	" 13	Brockville	" 51 " 254	60 00	
The National Breweries, Ltd., Reg. No. 3	" 19	Montreal	" 51 " 254	85 50	
The National Breweries, Ltd., Reg. No. 7	" 19	"	" 51 " 254	222 30	
Westminster Brewery, Ltd.	" 20	New Westminster	" 51 " 254	102 60	
Canadian B. & M. Co., Ltd.	" 20	Vancouver	" 51 " 254	602 77	
A. Keith & Son	" 22	Halifax	" 51 " 254	1,670 31	
M. J. Calcutt	Mar. 12	Peterboro	" 51 " 254	394 50	
Canadian B. & M. Co., Ltd.	" 22	Vancouver	" 51 " 254	1,059 32	
H. Corby Distillery Co., Ltd.	April 5	Thurlow	" 51 " 254	7,676 73	
Wilson, Lytle, Badgeron Co., Ltd.	" 19	Toronto	" 51 " 254	1,791 16	
James A. Roy	" 24	Belleville	" 51 " 254	95 55	
H. Corby Distillery Co., Ltd.	" 24	"	" 51 " 254	4,887 90	
Arthur Bixel	" 24	Brantford	" 51 " 254	384 60	
The Canada Malting Co., Ltd.	April 24	Dundas	" 51 " 254	827 33	
Grant's Spring Brewery Co., Ltd.	" 24	Hamilton	" 51 " 254	1,244 23	
The Hamilton Brewing Association, Ltd.	" 24	"	" 51 " 254	1,461 00	
Estate late Robert Stevenson	" 24	Kingston	" 51 " 254	176 77	
John Fisher	" 24	Portsmouth	" 51 " 254	104 53	
T. H. Carling	" 24	London	" 51 " 254	1,579 82	
John S. Labatt	" 24	"	" 51 " 254	1,409 62	
Brading Breweries, Ltd.	" 24	Ottawa	" 51 " 254	49 87	
The Capital Brewing Co., Ltd.	" 24	"	" 51 " 254	1,053 00	
Blake & Dunne	" 24	"	" 51 " 254	102 60	
Heisz & Tiede	" 25	Formosa	" 51 " 254	213 60	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Malt—Continued.	1917.			$ cts.	$ cts.
Jacob C. Huether	April 25	Neustadt	R.S., Cap. 51, Sec. 254	136 80	
Veronica Schwan	" 25	Carlsruhe	" 51 " 254	85 50	
John Arscott	" 25	Walkerton	" 51 " 254	73 64	
Sudbury B. & M. Co., Ltd	" 25	Sudbury	" 51 " 254	1,710 00	
The Kakabeka Falls Brewing Co., Ltd	" 25	Fort William	" 51 " 254	600 00	
Lakewood Brewing Co	" 25	Kenora	" 51 " 254	80 85	
Diamond Brewery Co., Ltd	" 25	Port Arthur	" 51 " 254	345 00	
John Watson	" 25	Listowel	" 51 " 254	116 92	
Felix Devlin	" 25	Stratford	" 51 " 254	83 07	
The Walkerville Brewing Co., Ltd	" 25	Walkerville	" 51 " 254	967 50	
Hiram Walker & Sons, Ltd	" 25	"	" 51 " 254	1,132 50	
A. L. Irim	" 25	Windsor	" 51 " 254	930 00	
National Breweries, Ltd. (Wm. Dow)	" 25	Montreal	" 51 " 254	0 82	
Royal Brewery	" 25	Valleyfield	" 51 " 254	75 00	
Frontenac Breweries, Ltd	" 25	Montreal	" 51 " 254	2,327 40	
Herbert Molson	" 25	"	" 51 " 254	9,720 00	
The Canada Malting Co., Ltd.	" 25	"	" 51 " 254	29,511 10	
La Brasserie Champlain, Ltd.	" 25	Quebec	" 51 " 254	2,889 08	
Silver Spring Brewery, Ltd	" 25	Sherbrooke	" 51 " 254	845 51	
St. Hyacinthe Distillery Co., Ltd	" 25	St. Hyacinthe	" 51 " 254	262 80	
Simeon Jones, Ltd	" 25	St. John	" 51 " 254	300 00	
Ready's Breweries, Ltd	" 25	"	" 51 " 254	1,080 00	
Halifax Breweries, Ltd	" 25	Halifax	" 51 " 254	783 00	
A. Keith & Sons	" 25	"	" 51 " 254	1,701 00	
Oland & Son, Ltd	" 25	"	" 51 " 254	482 10	
The Brandon Brewing Co., Ltd	" 25	Brandon	" 51 " 254	142 05	
The Empire Brewing Co., Ltd.	" 25	"	" 51 " 254	277 08	
The Lakewood Brewing Co., Ltd	" 25	Kenora	" 51 " 254	5 49	
The Canada Malting Co., Ltd.	" 25	Winnipeg	" 51 " 254	4,452 33	
Golden Lion Brewing Co	" 25	Prince Albert	" 51 " 254	148 04	
Regina Brewing Co., Ltd	" 25	Regina	" 51 " 254	154 31	
Moose Jaw B. & M. Co., Ltd	" 25	Moosejaw	" 51 " 254	329 40	
Hoesehen Wentzler Brewing Co	" 25	Saskatoon	" 51 " 254	540 00	
The Union Brewing Co., Ltd	" 25	Nanaimo	" 51 " 254	600 00	
The Silver Spring Brewery Co. Ltd	" 25	Victoria	" 51 " 254	1,020 00	
The Victoria Phoenix Brewing Co., Ltd	" 25	"	" 51 " 254	1,500 00	
Halifax Breweries, Ltd	" 25	Halifax	" 51 " 254	152 70	
A. Keith & Son	" 25	"	" 51 " 254	1,433 37	
Ready's Breweries, Ltd	" 26	St. John	" 51 " 254	133 36	
T. H. Carling	" 27	London	" 51 " 254	63 87	
Frontenac Breweries, Ltd	May 1	Montreal	" 51 " 254	381 90	
The National Breweries, Ltd., Reg. No. 3	" 1	"	" 51 " 254	171 00	
The National Breweries, Ltd., Reg. No. 3	" 1	"	" 51 " 254	111 15	
E. L. Drewry, Ltd	" 1	Winnipeg	" 51 " 254	208 05	
Canadian B. & M. Co., Ltd	" 1	Vancouver	" 51 " 254	1,597 68	
H. Corby Distillery Co., Ltd.	" 3	Thurlow	" 51 " 254	2,639 98	
La Brasserie Chaimplain, Ltd.	" 3	Quebec	" 51 " 254	3 18	
J. P. Wiser & Sons, Ltd	" 8	Prescott	" 51 " 254	467 08	
St. Lawrence Brewery, Ltd	" 8	Cornwall	" 51 " 254	1,883 64	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Malt—Concluded.	1917.			$ cts.	$ cts.
The Cosgrove Brewery Co., Ltd.	May 8	Toronto	R.S., Cap. 51, Sec. 254	203 10	
Soo Falls Brewing Co., Ltd.	" 8	Sault Ste. Marie	" 51 " 254	615 00	
L. Reinhardt	" 8	Toronto	" 51 " 254	1,000 80	
Copland Brewing Co., Ltd.	" 8	"	" 51 " 254	1,905 60	
The Dominion Brewery Co., Ltd.	" 8	"	" 51 " 254	2,705 10	
The Cosgrove Brewery Co., Ltd.	" 8	"	" 51 " 254	3,086 23	
The O'Keefe Brewery Co., Ltd.	" 8	"	" 51 " 254	5,098 20	
Grand Forks Brewing Co.	" 8	Grand Forks	" 51 " 254	29 10	
Nelson Brewing Co.	" 8	Princeton	" 51 " 254	54 00	
Cranbrooke Brewing Co.	" 8	Cranbrooke	" 51 " 254	60 00	
The Enterprise Brewing Co.	" 8	Revelstoke	" 51 " 254	118 60	
Imperial Brewing Co., Ltd.	" 8	Kamloops	" 51 " 254	142 70	
Le Roi Brewing Co.	" 8	Rossland	" 51 " 254	159 45	
Phoenix Brewing Co., Ltd.	" 8	Phoenix	" 51 " 254	182 51	
The Elk Valley Brewing Co.	" 8	Natal	" 51 " 254	278 25	
The Nelson Brewing Co., Ltd.	" 8	Nelson	" 51 " 254	336 00	
Agnes Mueller	" 8	Trail	" 51 " 254	360 00	
Westminster Brewery, Ltd.	" 8	New Westminster	" 51 " 254	450 00	
Fernie, Fort Steel Brewing Co.	" 8	Fernie	" 51 " 254	793 98	
Canadian B. & M. Co., Ltd.	" 8	Vancouver	" 51 " 254	3,822 00	
Geo. Sleeman	" 11	Guelph	" 51 " 254	65 10	
Wm. H. Lutz	" 11	Galt	" 51 " 254	129 41	
Mary Race	" 11	New Hamburg	" 51 " 254	154 46	
N. P. Reinhardt	" 11	Preston	" 51 " 254	175 95	
Wm. R. Halliday	" 11	Guelph	" 51 " 254	382 03	
The Berlin Lion Brewery, Ltd.	" 11	Kitchener	" 51 " 254	1,053 15	
Aloyes Banner	" 11	Waterloo	" 51 " 254	4,516 34	
Thos. F. Whyte	" 11	Port Colborne	" 51 " 254	570 00	
The Medicine Hat Brewing Co.	" 11	Medicine Hat	" 51 " 254	199 00	
Strathcona B. & M. Co., Ltd.	" 11	Edmonton	" 51 " 254	300 00	
Edmonton B. & M. Co., Ltd.	" 11	"	" 51 " 254	456 83	
The Lethbridge B. & M. Co., Ltd.	" 11	Lethbridge	" 51 " 254	465 00	
The Canada Malting Co., Ltd.	" 11	Calgary	" 51 " 254	574 74	
The Mountain Spring Brewing Co., Ltd.	" 11	"	" 51 " 254	806 98	
Calgary B. & M. Co., Ltd.	" 11	"	" 51 " 254	2,333 63	
Taylor & Bate	" 11	St. Catharines	" 51 " 254	767 47	
Canadian B. & M. Co., Ltd.	" 22	Vancouver	" 51 " 254	484 13	
The Victoria Phoenix Brewing Co., Ltd.	" 23	Victoria	" 51 " 254	205 20	
					249,057 86
Tobacco.					
The Empire Tobacco Co.	May 4	Sherbrooke	R.S., Cap. 51, Sec. 254	366 94	
" " "	" 16	"	" 51 " 254	156 24	
Imperial Tob. Co. of Canada, Ltd.	June 13	Montreal	" 51 " 254	31 50	
Wm. Goldstein & Co.	" 27	Ottawa	" 51 " 254	15 00	
Imperial Tob. Co. of Canada, Ltd.	July 24	Montreal	" 51 " 254	127 50	
M. Melachrino & Co., Ltd.	" 27	"	" 51 " 254	39 58	
Imperial Tobacco Co.	Aug. 24	Sherbrooke	" 51 " 254	143 50	
Imperial Tob. Co. of Canada, Ltd.	Sept. 22	Montreal	" 51 " 254	179 76	
Imperial Tob. Co. of Canada, Ltd.	Oct. 6	"	" 51 " 254	179 76	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Tobacco—Concluded.	1916.			$ cts.	$ cts.
Tobacco Products Corporation, Ltd.	" 6	"	R.S., Cap. 51, Sec. 254..	42 09	
The Empire Tob. Co., Branch of Imperial Tob. Co.	Nov. 2	Granby.....	" 51 " 254..	103 60	
Imperial Tob. Co., Ltd. (Cigar Dept.)	Dec. 20	Montreal.....	" 51 " 254..	119 94	
The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd...	" 20	Granby.....	" 51 " 254..	258 23	
	1917.				
The Tuckett Tobacco Co., Ltd.	Jan. 16	Hamilton.....	" 51 " 254..	15 50	
The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd...	" 25	Granby.....	" 51 " 254..	80 22	
Forest, Ltd.	Mar. 3	Montreal.....	" 51 " 254..	28 28	
Philip Morris & Co., Ltd.	" 3	"	" 51 " 254..	7 50	
Imperial Tobacco Co. of Canada, Ltd.	" 12	"	" 51 " 254..	338 13	
Imperial Tobacco Co. of Canada, Ltd.	April 17	"	" 51 " 254..	28 13	
The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd...	" 25	Granby.....	" 51 " 254..	102 62	
The Empire Tob. Co., Branch of Imperial Tob. Co., Ltd...	" 27	"	" 51 " 254..	2 10	
Tobacco Products Corporation Ltd.	May 1	Montreal.....	" 51 " 254..	19 90	
The Dominion Tobacco Co....	" 11	"	" 51 " 254..	3 46	
" " ...	" 11	"	" 51 " 254..	71 07	
Wm. Goldstein & Co.	" 11	Ottawa.....	" 51 " 254..	45 00	
					2,505 55
Cigars.	1916.				
Imperial Tob. Co. of Canada, Ltd.	June 13	Montreal.....	R.S., Cap. 51, Sec. 254..	6 75	
Theodore Rodriguez	" 27	London.....	" 51 " 254..	45 83	
Imperial Tob. Co. of Canada, Ltd.	July 24	Montreal.....	" 51 " 254..	8 85	
The Strathcona Cigar Factory	" 28	Calgary.....	" 51 " 254..	37 50	
Imperial Tob. Co. Ltd. (Cigar Dept.)	Dec. 20	Montreal.....	" 51 " 254..	11 25	
Peterborough Havana Cigar Co.	May 28	Peterborough....	" 51 " 254..	5 53	
					115 71
Officers' Salary.					
S. Allen	April 26	Norwich.....	R.S., Cap. 51, Sec. 254..	300 00	
Dominion Vinegar Works Co..	May 5	Hamilton.....	" 51 " 254..	300 00	
The B.C. Distillery Co., Ltd.	" 11	Vancouver.....	" 51 " 254..	300 00	
T. McCready & Son, Ltd.	" 28	St. John.....	" 51 " 254..	300 00	
					1,200 00
Sundries.					
Wm. Bishop	June 27	Port Arthur.....	R.S., Cap. 51, Sec. 254..	45 83	
Thos. Jordan	July 28	Winnipeg.....	" 51 " 254..	41 66	
Buckwold & Corman	" 28	"	" 51 " 254..	41 66	
Jos. E. Seagram	Sept. 22	"	" 51 " 254..	33 33	
Thos. Griffiths & Co., Ltd....	" 22	"	" 51 " 254..	37 50	
The Western Commercial Co., Ltd.	Oct. 13	Edmonton.....	" 51 " 254..	37 50	
The Hudson Bay Co.	" 17	"	" 51 " 254..	37 50	
Wetaskiwin Wine & Spirits Co.	" 17	Wetaskiwin.....	" 51 " 254..	33 33	
Great West Liquor Co., Ltd..	" 17	Calgary.....	" 51 " 254..	37 50	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
Sundries—Concluded.	1916.			$ cts.	$ cts.
The Western Commercial Co., Ltd	Oct. 17	Calgary	R.S., Cap. 51, Sec. 254	37 50	
Beverages, Ltd	" 17	"	" 51 " 254	37 50	
Chevalier, Pouliot & Cie	" 26	Joliette	" 51 " 254	25 00	
James McPharland	Nov. 15	Kingston	" 51 " 254	29 16	
Alphonse Millette	Dec. 18	St. Guillaume d'Upton	" 51 " 254	25 00	
Mrs. E. A. Smith	" 18	Prescott	" 51 " 254	50 00	
	1917.				
The Metropole Wine & Spirits	Jan. 18	Edmonton	" 51 " 254	37 50	
J. S. Hamilton & Co	" 25	Brantford	" 51 " 254	25 00	
J. H. Aubé	" 25	Crysler	" 51 " 254	20 00	
Ekers Brewery	Mar. 3	Montreal	" 51 " 254	75 00	
Formosa Spring Brewery	" 3	"	" 51 " 254	25 00	
John Fisher	" 16	Portsmouth	" 51 " 254	20 83	
R. A. Gillespie	" 16	Winnipeg	" 51 " 254	100 00	
Howard McMoltz	April 5	St. Catharines	" 51 " 254	25 00	
Chas. Cantin	" 16	Quebec	" 51 " 254	100 00	
The Hudson's Bay Co	" 25	Lethbridge	" 51 " 254	29 16	
					1,007 46
War Tax.					
Cyrias Gauthier	May 16	Montreal	" 51 " 254	6 00	
J. N. Chartrand	" 16	"	" 51 " 254	6 20	
C. Vidricaire	" 16	"	" 51 " 254	3 20	
Theoret & Senecal	" 16	"	" 51 " 254	3 80	
Adanac Cafe, Ltd	" 16	"	" 51 " 254	5 30	
La Cie Restaurant Nationale	" 16	"	" 51 " 254	3 90	
R. Berger	" 16	Moosejaw	" 51 " 254	4 70	
H. J. Glass	" 16	"	" 51 " 254	7 30	
L. Bennett	" 16	"	" 51 " 254	9 60	
Masons Hotel Co., Ltd	" 16	"	" 51 " 254	4 80	
A. J. Purdy	" 16	"	" 51 " 254	2 65	
D. Arcand	June 27	Quebec	" 51 " 254	150 00	
International Mercantile Marine Co	" 27	Winnipeg	" 51 " 254	2 00	
Cyrille Labelle & Co	July 27	St. Hyacinthe	" 51 " 254	20 65	
P. Richard	Aug. 2	Montreal	" 51 " 254	53 50	
H. R. Frankland	" 4	Toronto	" 51 " 254	25 00	
C. P. Mainville	" 4	Joliette	" 51 " 254	25 00	
John D. Fox	" 4	Montreal	" 51 " 254	25 00	
R. W. Fletcher	" 4	Calgary	" 51 " 254	25 00	
"	" 4	"	" 51 " 254	37 50	
White Star Line	" 15	Montreal	" 51 " 254	11 00	
American Line	" 15	"	" 51 " 254	11 00	
"	" 15	"	" 51 " 254	4 00	
Stovel Bros., Ltd	" 21	Winnipeg	" 51 " 254	40 00	
Chas. Dunn and H. R. Marion	Sept. 22	Chatham	" 51 " 254	2 65	
Geo. and Ed. Couture	" 22	Quebec	" 51 " 254	44 80	
Hotel Quebec, Ltd	" 22	Montreal	" 51 " 254	0 60	
Grand & Co., Ltd	" 22	Toronto	" 51 " 254	19 88	
Benson Stabeck Co., Ltd	" 22	Winnipeg	" 51 " 254	40 00	
White Star Dominion Line	" 22	Montreal	" 51 " 254	5 00	
James Serra	Oct. 17	Banff	" 51 " 254	10 00	
Great West Liquor Co., Ltd	" 17	Calgary	" 51 " 254	3 75	
The Western Commercial Co., Ltd	" 17	"	" 51 " 254	13 00	
J. A. Loranger	" 19	Montreal	" 51 " 254	262 50	
G. B. Lafleur	" 17	"	" 51 " 254	175 00	
E. Desroches	" 17	"	" 51 " 254	0 50	
W. J. Radigan	" 26	Guelph	" 51 " 254	0 80	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Continued.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
War Tax—Continued.	1917.			$ cts.	$ cts.
L. R. Haskell	Oct. 26	Guelph	R.S., Cap. 51, Sec. 254	8 20	
The Hillrust Wine Co., Ltd	" 26	St. Catharines	" 51 " 254	14 52	
W. H. Littlefield	Nov. 4	Brantford	" 51 " 254	14 55	
Rolph & Clark, Ltd	" 4	Toronto	" 51 " 254	75 98	
Estate Dr. A. Freeland	" 4	Ottawa	" 51 " 254	25 00	
Frederick Green	" 7	Sherbrooke	" 51 " 254	400 00	
G. B. Lafleur	" 13	Montreal	" 51 " 254	25 00	
J. A. Loranger	" 13	"	" 51 " 254	12 50	
J. A. D. Houde	" 13	"	" 51 " 254	75 00	
L. H. Hall	" 13	Moosejaw	" 51 " 254	25 00	
A. J. Courtemanche	" 13	Timmins	" 51 " 254	25 00	
J. E. Harley	" 13	Horizon	" 51 " 254	25 00	
Dominico Priore	" 14	Trail	" 51 " 254	56 20	
The T. Eaton Co., Ltd	" 15	Toronto	" 51 " 254	27 74	
H. J. Dager	" 15	"	" 51 " 254	275 00	
W. J. Anderson	Nov. 15	Assiniboia	" 51 " 254	74 78	
G. H. Normandin	" 23	Berthierville	" 51 " 254	25 00	
W. J. Wade	" 23	Lethbridge	" 51 " 254	2 50	
R. W. Swaisland	" 25	Kitchener	" 51 " 254	25 00	
H. J. Dager	" 25	Toronto	" 51 " 254	100 00	
J. O. Hiscott	" 25	Hamilton	" 51 " 254	25 00	
F. Green	" 25	Sherbrooke	" 51 " 254	50 00	
Leon Hardy	" 25	Quebec	" 51 " 254	125 00	
F. W. Forde	" 25	Ottawa	" 51 " 254	25 00	
Meyer Chertkoff	Dec. 18	Hamilton	" 51 " 254	50 00	
A. Larue	" 21	Quebec	" 51 " 254	150 00	
Hovey & Son	" 23	Cobourg	" 51 " 254	21 20	
J. S. Hart	" 23	Windsor	" 51 " 254	54 40	
J. Butler	" 23	Castor	" 51 " 254	5 00	
H. J. Dager	" 23	Toronto	" 51 " 254	25 00	
G. B. Lafleur	" 23	Montreal	" 51 " 254	37 50	
G. A. Loranger	" 23	"	" 51 " 254	37 50	
	1917.				
A. F. Webster & Son	Jan. 18	Toronto	" 51 " 254	3 00	
A. J. Hammond	" 27	Maple Creek	" 51 " 254	25 00	
A. F. Simpson	Feb. 5	Sherbrooke	" 51 " 254	25 00	
B. Iler	" 6	Guelph	" 51 " 254	25 00	
J. R. Hanlon	" 6	"	" 51 " 254	25 00	
T. H. Verner	" 6	Winnipeg	" 51 " 254	75 00	
J. W. Sparling	" 6	"	" 51 " 254	75 00	
W. J. Ivey	" 6	"	" 51 " 254	125 00	
F. A. Nicholl	" 6	"	" 51 " 254	50 00	
P. J. Fegan	" 6	"	" 51 " 254	25 00	
W. Eddie	" 6	"	" 51 " 254	25 00	
A. S. Band	" 13	Regina	" 51 " 254	25 00	
J. J. Wilson	" 13	Maple Creek	" 51 " 254	25 00	
L. H. Hall	" 13	Regina	" 51 " 254	50 00	
J. Slavin	" 13	Kendall	" 51 " 254	25 00	
J. W. Sparling	" 13	Moosejaw	" 51 " 254	25 00	
M. J. O'Donohue	" 22	Brantford	" 51 " 254	25 00	
J. F. Carson	" 22	"	" 51 " 254	25 00	
H. J. Dager	" 22	Toronto	" 51 " 254	100 00	
T. Green	" 22	Sherbrooke	" 51 " 254	50 00	
J. A. Cadotte	" 22	St. Hyacinthe	" 51 " 254	50 00	
A. Francoeur	" 22	"	" 51 " 254	50 00	
S. J. Waddell	" 22	Halifax	" 51 " 254	25 00	
Mrs. M. E. Twohey	" 22	Vancouver	" 51 " 254	25 00	
J. Thorburn	" 22	"	" 51 " 254	25 00	
F. W. Ford	" 27	Ottawa	" 51 " 254	25 00	
A. Goulet	" 27	"	" 51 " 254	50 00	
Bank of Montreal	Mar. 2	"	" 51 " 254	48 75	

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Continued.*

EXCISE—*Concluded.*

Articles and to whom paid.	Date.	Divisions.	Under what Authority Refunded.	Amounts.	Totals.
War Tax—Concluded.	1917.			$ cts.	$ cts.
Dominion Printing & Loose Leaf Co., Ltd.	Mar. 5	Ottawa	R.S., Cap. 51, Sec. 254.	20 00	
The Canada Box Board Co., Ltd.	" 5	Montreal	" 51 " 254.	50 00	
The Alexander & Cable Lithographing Co., Ltd.	" 5	Toronto	" 51 " 254.	6 72	
The Mortimer Co., Ltd.	" 5	Ottawa	" 51 " 254.	40 00	
Canadian Pacific Ry. Co.	" 5	Montreal	" 51 " 254.	1,443 24	
Wardell & Co.	" 5	Huntsville	" 51 " 254.	25 00	
A. R. Farr.	" 5	"	" 51 " 254.	25 00	
C. R. Caotts.	" 5	Ashcroft	" 51 " 254.	11 50	
Geo. S. Harding.	" 5	Guelph	" 51 " 254.	1 00	
R. C. Sturgeon.	" 5	Windsor	" 51 " 254.	3 60	
L. Hardy.	" 10	Quebec	" 51 " 254.	25 00	
H. J. Dager.	" 10	Toronto	" 51 " 254.	25 00	
J. E. Seagram & Sons, Ltd.	" 16	Waterloo	" 51 " 254.	46 10	
American Line.	" 16	Montreal	" 51 " 254.	3 00	
H. J. Dager.	" 22	Toronto	" 51 " 254.	200 00	
J. Thorburn.	" 26	Vancouver	" 51 " 254.	37 50	
J. V. Gibson.	" 26	"	" 51 " 254.	37 50	
A. Goulet.	" 27	Ottawa	" 51 " 254.	75 00	
A. Laverdure.	" 27	"	" 51 " 254.	75 00	
The Mortimer Co., Ltd.	April 5	"	" 51 " 254.	159 94	
F. W. Ford.	" 13	"	" 51 " 254.	12 50	
E. Laverdure.	" 13	"	" 51 " 254.	25 00	
A. Goulet.	" 13	"	" 51 " 254.	12 50	
L. Hardy.	" 13	Quebec	" 51 " 254.	25 00	
H. J. Dager.	" 13	Toronto	" 51 " 254.	75 00	
J. M. Cavanagh.	" 17	Montreal	" 51 " 254.	50 00	
John M. Cox.	" 20	Toronto	" 51 " 254.	50 00	
J. A. Houde.	" 27	Montreal	" 51 " 254.	87 50	
G. A. Loranger.	" 27	"	" 51 " 254.	87 50	
Estate late G. A. Lafleur.	" 27	"	" 51 " 254.	62 50	
Harry Shepherd.	May 4	North Bay	" 51 " 254.	16 30	
A. F. Larose.	" 28	Montreal	" 51 " 254.	50 00	
					6,973 80
Weights and Measures.	1916.				
Curtiss & Harvey (Canada), Ltd.	Nov. 30	Montreal	R.S., Cap. 51, Sec. 254.	0 90	
	1917.				
H. Spicer.	Mar. 5	Winnipeg	" 51 " 254.	11 00	
					11 90
Adulteration of Food.	1916.				
John McClonnie.	June 27	Vernon	R.S., Cap. 51, Sec. 254.	5 00	
James Taylor.	July 6	Nanaimo	" 51 " 254.	10 00	
Francis Walker.	Aug. 2	Arronsmith	" 51 " 254.	45 00	
	1917.				
E. Parent.	May 4	Montreal	" 51 " 254.	202 50	
J. J. Costigan.	" 22	"	" 51 " 254.	75 00	
					337 50
Patent Medicines.	1917.				
W. E. Foxwell.	Jan. 18	Victoria	R.S., Cap. 51, Sec. 254.	1 00	1 00
Grand total.					294,322 22

No. 15.—Refunds of Revenue during the Fiscal Year ended March 31, 1917—*Concluded.*

RECAPITULATION.

Excise Refunds.

Spirits	$ 33,111 44	
Malts	249,057 86	
Tobacco	2,505 55	
Cigars	115 71	
Officers' salary	1,200 00	
Sundries	1,007 46	
		$ 286,998 02
War Tax		6,973 80
Weights and Measures		11 90
Food		337 50
Patent Medicines		1 00
Grand Total		$ 294,322 22

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 16.—DEPARTMENTAL EXPENDITURES FOR 1916-17. CR.

Due By Sundry Persons, April 1, 1916.	Disbursed by the Receiver General.	Deductions for			Totals.	——	Salaries.	Contingencies.	Due by Sundry Persons, March 31, 1917.	Totals.
		Superannuation.	Insurance.	Retirement.						
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.
.....	7,000 00	.....	.....	.....	7,000 00	Minister of Inland Revenue.....	7,000 00	.....	.....	7,000 00
.....	121,889 11	494 86	1,214 07	4,833 93	128,431 97	Departmental Officers.....	128,431 97	.....	.....	128,431 97
.....	550 83	.....	.....	.....	550 83	Subscriptions to newspapers.....	.....	550 83	.....	550 83
.....	5,587 61	.....	.....	.....	5,587 61	Extra Clerks.....	.....	5,587 61	.....	5,587 61
.....	515 11	.....	.....	.....	515 11	Telegraph Companies.....	.....	515 11	.....	515 11
.....	384 60	.....	.....	.....	384 60	Books and Parliamentary publications.....	.....	384 60	.....	384 60
.....	4,255 60	.....	.....	.....	4,255 60	Stationery.....	.....	4,255 60	.....	4,255 60
.....	2,645 32	.....	.....	.....	2,645 32	Printing.....	.....	2,645 32	.....	2,645 32
.....	5,388 48	.....	.....	.....	5,388 48	Sundry persons.....	.....	5,388 48	.....	5,388 48
16 66	.....	.....	.....	.....	16 66	Balance due.....	.....	.....	16 66	16 66
16 66	148,216 66	494 86	1,214 07	4,833 93	154,776 18	.....Totals.....	135,431 97	19,327 55	16 66	154,776 18

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, GAS, ELECTRIC LIGHT AND LAW STAMPS.

No. 17—Statement showing amount of Revenue accrued during the year ended March 31, 1917.

Dr.

	Weights and Measures Stamps.	Gas Stamps.	Electric Light Stamps.	Law Stamps.			Totals.
				Supreme Court.	Exchequer Court.	Territorial Court.	
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
The amount of stamps in the hands of distributors, April 1, 1916	153,739 05	72,834 65	110,394 35	149 05	105 00	6,472 80	343,694 90
To stamps issued by the Inland Revenue Department during the year ended March 31, 1917	138,045 00	47,535 00	70,360 00	2,800 00	5,189 00	4,000 00	267,929 00
Totals	291,784 05	120,369 65	180,754 35	2,949 05	5,294 00	10,472 80	611,623 90

Cr.

By amount of stamps destroyed and returned by distributors	113 05	620 00					733 05
By amount of stamps remaining in the hands of distributors, March 31, 1917	161,380 80	65,682 30	109,638 75	512 20	89 00	8,204 55	345,507 60
By balance being the revenue during the year ended March 31, 1917	130,290 20	54,067 35	71,115 60	2,436 85	5,205 00	2,268 25	265,383 25
Totals	291,784 05	120,369 65	180,754 35	2,949 05	5,294 00	10,472 80	611,623 90

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, 1916-17.

DR. No. 18 (A)—INSPECTION DIVISIONS in Account with Revenue. CR.

BALANCES DUE BY INSPECTORS, APRIL 1, 1916.		Stamps issued to Inspectors.	Other Receipts.	Seizures and Penalties.	Totals.	Divisions.	Returned Damaged Stamps.	Deposited to Credit of Receiver-General.	BALANCES DUE BY INSPECTORS, MARCH 31, 1917.		Totals.
Stamps on hand.	Cash on hand.								Stamps on hand.	Cash on hand.	
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
7,799 25	0 80	3,940 00	15 00	.....	11,755 05	Belleville	.....	2,492 80	9,261 75	0 50	11,755 05
6,393 20	.....	12,095 00	.....	.....	18,488 20	Hamilton	.....	12,919 10	5,558 05	11 05	18,488 20
414 60	.....	1,480 00	2 50	.....	1,897 10	Kingston	.....	1,104 05	793 05	.....	1,897 10
8,479 30	.....	11,710 00	.....	.....	20,189 30	London	.....	10,974 90	9,213 05	1 35	20,189 30
6,930 85	.....	10,135 00	.....	.....	17,065 85	Ottawa	3 50	8,865 45	8,188 35	8 55	17,065 85
5,457 15	.....	14,075 00	.....	20 00	19,552 15	Toronto	.....	14,735 20	4,816 20	0 75	19,552 15
35,474 35	0 80	53,435 00	17 50	20 00	88,947 65	*Ontario*	3 50	51,091 50	37,830 45	22 20	88,947 65
57,506 15	1 00	2,250 00	.....	.....	59,757 15	Montreal	.....	11,932 50	47,819 40	5 25	59,757 15
4,220 90	.....	4,965 00	.....	5 00	9,190 90	Quebec	1 00	5,947 60	3,242 30	.....	9,190 90
6,742 20	.....	4,650 00	.....	.....	11,392 20	Sherbrooke	.....	6,158 85	5,233 35	.....	11,392 20
2,834 30	.....	6,525 00	.....	.....	9,359 30	St. Hyacinthe	7 60	2,526 70	6,825 00	.....	9,359 30
2,358 25	.....	805 00	.....	.....	3,163 25	Three Rivers	55 50	985 05	2,122 70	.....	3,163 25
73,661 80	1 00	19,195 00	.....	5 00	92,862 80	*Quebec*	64 10	27,550 70	65,242 75	5 25	92,862 80
594 55	.....	3,780 00	4 00	.....	4,378 55	*St. John, N.B*	.....	3,492 40	886 15	.....	4,378 55
2,603 35	36 00	2,110 00	1 50	.....	4,750 85	Halifax	.....	1,335 70	3,415 15	.....	4,750 85
2,707 85	0 50	3,115 00	.....	.....	5,823 35	Pictou	.....	1,959 20	3,860 00	4 15	5,823 35
5,311 20	36 50	5,225 00	1 50		10,574 20	*Nova Scotia*	.....	3,294 90	7,275 15	4 15	10,574 20
902 50	2 50	415 00	.....	.....	1,320 00	*Charlottetown, P.E.I*	.....	621 30	698 70	.....	1,320 00
6,330 70	.....	17,395 00	.....	.....	23,725 70	*Winnipeg, Man*	5 00	12,229 05	11,440 75	50 90	23,725 70

WEIGHTS AND MEASURES, 1916-17.

DR. No. 18 (A)—INSPECTION DIVISIONS in Account with Revenue—*Concluded.* CR.

BALANCES DUE BY INSPECTORS APRIL 1, 1916.		Stamps issued to Inspectors.	Other Receipts.	Seizures and Penalties.	Totals.	Divisions.	Returned Damaged Stamps.	Deposited to Credit of Receiver. General.	BALANCES DUE BY INSPECTORS, MARCH 31, 1917.		Totals.
Stamps on hand.	Cash on hand.								Stamps on hand.	Cash on hand.	
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
7,094 45		13,735 00			20,829 45	Regina		10,458 40	10,316 25	54 80	20,829 45
7,744 65		10,225 00			17,969 65	Saskatoon	40 45	9,407 00	8,522 20		17,969 65
14,839 10		23,960 00			38,799 10	*Saskatchewan*	40 45	19,865 40	18,838 45	54 80	38,799 10
7,454 30		6,660 00	1 25	10 00	14,125 55	Calgary		4,292 65	9,827 35	5 55	14,125 55
		5,600 00			5,600 00	Edmonton		4,224 60	1,367 75	7 65	5,600 00
7,454 30		12,260 00	1 25	10 00	19,725 55	*Alberta*		8,517 25	11,195 10	13 20	19,725 55
2,697 40		380 00			3,077 40	Nelson		1,227 45	1,841 05	8 90	3,077 40
4,652 95		2,000 00			6,652 95	Vancouver		2,294 05	4,358 90		6,652 95
7,350 35		2,380 00			9,730 35	*British Columbia*		3,521 50	6,199 95	8 90	9,730 35
1,820 20					1,820 20	*Dawson, Yukon*		46 85	1,773 35		1,820 20
153,739 05	40 80	138,045 00	24 25	35 00	291,884 10	Totals	113 05	130,230 85	161,380 80	159 40	291,884 10
					1,394 75	Milk test glassware		1,394 75			1,394 75
					293,278 85			131,625 60			293,278 85
					11 90	Less Refunds as per Statement No. 15		11 90			11 90
153,739 05	40 80	138,045 00	24 25	35 00	293,266 95	Grand totals	113 05	131,613 70	161,380 80	159 40	293,266 95

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, 1916-17.

No. 18 (B).—Deputy Inspectors of Old Divisions in Account with Revenue.

Dr. Cr.

Balances due April 1, 1917. — Cash on hand.	Totals.	Divisions.	Balances due March 31, 1917 — Cash on hand.	Totals.
$ cts.	$ cts.		$ cts.	$ cts.
87 10	87 10	Essex, Ont.	87 10	87 10
5 62	5 62	Hull, Que.	5 62	5 62
92 72	92 72		92 72	92 72

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, 1916-17.

No. 19 (B).—Old Inspection Divisions in Account with Expenditures.

Dr. Cr.

Balances due by sundry persons, April 1, 1917.	Totals.	Divisions.	Balances due by sundry persons, March 31, 1917.	Totals.
$ cts.	$ cts.		$ cts.	$ cts.
39 56	39 56	Essex	39 56	39 56
33 53	33 53	Waterloo	33 53	33 53
73 09	73 09	*Ontario*	73 09	73 09
0 33	0 33	Drummond	0 33	0 33
41 45	41 45	Laval	41 45	41 45
26 88	26 88	Montmorency	26 88	26 88
27 51	27 51	Richelieu	27 51	27 51
96 17	96 17	*Quebec*	96 17	96 17
24 00	24 00	Lunenburg *Nova Scotia*	24 00	24 00
193 26	193 26	Totals	193 26	193 26

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

WEIGHTS AND MEASURES, 1916-17.

No. 19 (A).—Inspection Divisions in Account with Expenditures.

Dr. Cr.

Balances due by Inspectors, April 1, 1916.	Amounts received from Department to meet Expenditures.	Deductions from Salaries for			Totals.	Divisions.	Expenditures authorized by the Department.					Balances due by Inspectors, March 31, 1917.	Totals.
		Superannuation.	Insurance.	Guarantee.			Salaries.	Special Assistance	Rent.	Travelling Expenses.	Sundries.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
.....	5,724 49	.....	.....	9 00	5,733 49	Belleville	3,624 78	75 00	772 00	985 76	275 95	.....	5,733 49
.....	11,241 37	.....	.....	16 20	11,257 57	Hamilton	8,182 92	.....	.....	2,953 44	121 21	.....	11,257 57
.....	3,085 87	.....	.....	6 90	3,092 77	Kingston	2,741 58	.....	.....	306 09	45 10	.....	3,092 77
.....	8,718 05	.....	.....	11 85	8,729 90	London	5,646 22	120 00	.....	2,775 86	187 82	.....	8,729 90
.....	15,036 34	33 00	.....	21 90	15,091 24	Ottawa	10,816 20	1,823 65	.....	2,331 35	120 04	.....	15,091 24
.....	10,793 46	24 00	.....	16 20	10,833 66	Toronto	8,741 46	.....	.....	1,983 29	108 91	.....	10,833 66
.....	54,599 58	57 00	.....	82 05	54,738 63	*Ontario*	39,753 16	2,018 65	772 00	11,335 79	859 03	.....	54,738 63
.....	19,358 67	.....	.....	23 77	19,382 44	Montreal	13,235 69	1,422 42	1,624 98	2,727 60	371 75	.....	19,382 44
.....	16,608 72	38 40	87 60	23 40	16,758 12	Quebec	9,399 72	3,971 08	300 00	2,865 22	222 10	.....	16,758 12
.....	5,092 10	.....	77 40	7 20	5,176 70	Sherbrooke	2,983 20	582 14	625 00	881 45	104 91	.....	5,176 70
.....	3,978 60	.....	.....	5 40	3,984 00	St. Hyacinthe	2,199 96	565 71	.....	1,140 80	77 53	.....	3,984 00
.....	4,838 84	.....	22 00	8 85	4,869 69	Three Rivers	3,466 50	904 32	.....	410 11	88 76	.....	4,869 69
.....	49,876 93	38 40	187 00	68 62	50,170 95	*Quebec*	31,285 07	7,445 67	2,549 98	8,025 18	865 05	.....	50,170 95
.....	5,978 22	.....	.....	10 80	5,989 02	St. John, N.B	4,916 54	16 00	.....	905 24	151 24	.....	5,989 02
.....	4,150 45	.....	.....	5 40	4,155 85	Halifax	1,883 23	859 92	507 36	669 09	236 25	.....	4,155 85
.....	4,024 31	27 96	.....	7 20	4,059 47	Pictou	3,241 50	48 00	.....	695 10	74 87	.....	4,059 47
.....	8,174 76	27 96	.....	12 60	8,215 32	*Nova Scotia*	5,124 73	907 92	507 36	1,364 19	311 12	.....	8,215 32
.....	1,425 42	.....	.....	3 60	1,429 02	Charlottetown, P.E.I	1,099 92	60 00	.....	246 54	22 56	.....	1,429 02
.....	14,256 47	.....	.....	18 00	14,274 47	*Winnipeg, Man*	7,824 78	.....	1,408 29	4,824 52	216 88	.....	14,274 47
.....	7,639 02	31 92	.....	8 70	7,679 64	Calgary	4,775 07	590 34	.....	2,105 52	208 71	.....	7,679 64
.....	3,785 78	.....	.....	3 45	3,789 23	Edmonton	1,200 00	.....	540 00	1,757 15	292 08	.....	3,789 23

WEIGHTS AND MEASURES, 1916-17.

DR. No. 19 (A).—INSPECTION Divisions in Account with Expenditures—*Concluded.* CR.

Balances due by Inspectors, April 1, 1916.	Amounts received from Department to meet Expenditures.	Deductions from Salaries for			Totals.	Divisions.	Expenditures authorized by the Department.					Balances due by Inspectors, March 31, 1917.	Totals.
		Superannuation.	Insurance.	Guarantee.			Salaries.	Special Assistance	Rent.	Travelling expenses.	Sundries.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
.....	11,424 80	31 92	.....	12 15	11,468 87	.....*Alberta*.....	5,975 07	590 34	540 00	3,862 67	500 79	.....	21,468 87
.....	10,256 02	.....	.....	7 20	10,263 22	Regina.....	2,899 92	1,390 93	.....	5,689 73	282 64	.....	10,263 22
3 70	12,061 34	.....	.....	10 35	12,075 39	Saskatoon.....	5,391 48	1,019 99	180 00	5,248 93	231 29	3 70	12,075 39
3 70	22,317 36	.....	.....	17 55	22,338 61	.....*Saskatchewan*.....	8,291 40	2,410 92	180 00	10,938 66	513 93	3 70	22,338 61
.....	4,240 64	.....	.....	4 65	4,245 29	Nelson.....	1,716 54	363 30	180 00	1,881 20	104 25	.....	7,245 29
.....	3,025 37	.....	56 16	7 20	3,088 73	Vancouver.....	2,420 73	48 00	.....	176 35	443 65	.....	3,088 73
.....	7,266 01	.....	56 16	11 85	7,334 02	.....*British Columbia*.....	4,137 27	411 30	180 00	2,057 55	547 90	.....	7,334 02
.....	1,010 36	.....	.....	3 60	1,013 96	Dawson—*Yukon*.....	999 96	.....	.....	.....	14 00	.....	1,013 96
.....	220 02	.....	.....	.....	220 02	Chief Inspector.....	.....	.....	.....	.....	220 02	.....	220 02
.....	344 31	.....	.....	.....	344 31	A. A. Bowen—Inspector of Elevator	298 63	.....	.....	45 68	.....	.....	344 31
.....	244 58	.....	.....	.....	244 58	J. G. White—Inspector of Elevator	244 58	.....	.....	.....	.....	.....	244 58
3 70	177,138 82	155 28	243 16	240 82	177,781 78		109,951 11	13,860 80	6,137 63	43,606 02	4,222 52	3 70	177,781 78
.....	1,409 26	.....	.....	.....	1,409 26	General Contingencies.....	.....	.....	.....	.....	1,409 26	.....	1,409 26
.....	3,339 73	.....	.....	.....	3,339 73	Printing.....	.....	.....	.....	.....	3,339 73	.....	3,339 73
.....	653 15	.....	.....	.....	653 15	Stationery.....	.....	.....	.....	.....	653 15	.....	653 15
.....	4,690 23	.....	.....	.....	4,690 23	Provisional Allowance.....	.....	.....	.....	.....	4,690 23	.....	4,690 23
.....	216 15	.....	.....	.....	216 15	International Bureau of Weights and Measures.....	.....	.....	.....	.....	216 15	.....	216 15
3 70	187,447 34	155 28	243 16	240 82	188,090 30	.....Grand Totals.....	109,951 11	13,860 80	6,137 63	43,606 02	14,531 04	3 70	188,090 30

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

GAS INSPECTION, 1916-17.

No. 20.—Inspection Districts in Account with Revenue.

Dr. Cr.

Balances due by Inspectors, April 1, 1916. — Stamps on Hand.	Stamps issued to Inspectors	Seizure and Penalties.	Totals.	Districts.	Returned Damaged Stamps.	Deposited to Credit of Receiver General.	Balances due by Inspectors, Mar. 31, 1917.	Totals.
$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.
2,209 65	1,125 00	.....	3,334 65	Belleville	.....	2,026 20	1,308 45	3,334 65
2,922 25	6,800 00	.....	9,722 25	Hamilton	.....	5,978 05	3,744 20	9,722 25
3,786 35	6,430 00	60 00	10,276 35	London	.....	6,281 10	3,995 25	10,276 35
4,701 70	.....	.....	4,701 70	Ottawa	.....	2,649 80	2,051 90	4,701 70
7,287 60	10,975 00	.....	18,262 60	Toronto	.....	14,647 90	3,614 70	18,262 60
20,907 55	25,330 00	60 00	46,297 55	*Ontario*	.....	31,583 05	14,714 50	46,297 55
1,851 55	14,525 00	.....	16,376 55	Montreal	.....	13,009 30	3,367 25	16,376 55
1,344 10	900 00	.....	2,244 10	Quebec	620 00	1,006 20	617 90	2,244 10
610 70	600 00	.....	1,210 70	Sherbrooke	.....	236 00	974 70	1,210 70
418 85	.....	.....	418 85	St. Hyacinthe	.....	86 40	332 45	418 85
4,225 20	16,025 00	.....	20,250 20	.....	620 00	14,337 90	5,292 30	20,250 20
1,483 90	1,120 00	.....	2,603 90	*St. John, N.B*	.....	645 60	1,958 30	2,603 90
328 85	1,275 00	30 00	1,633 85	*Halifax, N.S*	.....	543 60	1,090 25	1,633 85
1,218 05	.....	.....	1,218 05	*Charlottetown, P.E.I*	.....	39 50	1,178 55	1,218 05
32,852 10	.....	.....	32,852 10	*Winnipeg, Man*	.....	2,780 55	30,071 55	32,852 10
7,025 85	2,100 00	.....	9,125 85	*Calgary, Alta*	.....	997 90	8,127 95	9,125 85
3,693 65	400 00	.....	4,093 65	Vancouver	.....	2,412 65	1,681 00	4,093 65
1,099 50	1,285 00	.....	2,384 50	Victoria	.....	816 60	1,567 90	2,384 50
4,793 15	1,685 00	.....	6,478 15	*British Columbia*	.....	3,229 25	3,248 90	6,478 15
72,834 65	47,535 00	90 00	120,459 65	Grand Totals	620 00	54,157 35	65,682 30	120,459 65

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 21.—INSPECTION DISTRICTS IN

Balances due by Inspectors, April 1, 1916.	Amounts received from Department to meet Expenditures.	Deductions from Salaries for			Totals.	Districts.
		Superannuation.	Retirement.	Guarantee.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	
.....	1,268 46.	.....	.....	.....	1,268 46	Belleville.....
.....	5,745 31	.....	.....	9 75	5,755 06	Hamilton.....
.....	6,187 80	.....	.....	10 65	6,198 45	London.....
.....	7,305 59	.....	.....	7 98	7,313 57	Ottawa.....
.....	11,556 52	7 92	90 00	23 40	11,677 84	Toronto.....
.....	32,063 68	7 92	90 00	51 78	32,213 38	....*Ontario*.....
.....	8,857 76	.....	.....	14 91	8,872 67	Montreal.....
.....	762 38	.....	.....	4 20	766 58	Quebec.....
.....	492 06	3 96	.....	3 90	499 92	Sherbrooke.....
.....	10,112 20	3 96	.....	23 01	10,139 17	....*Quebec*.....
.....	98 16	.....	.....	1 80	99 96	Fredericton.....
.....	2,717 13	.....	.....	5 40	2,722 53	St. John.....
.....	2,815 29	.....	.....	7 20	2,822 49	....*New Brunswick*.....
.....	2,935 37	1 92	.....	7 20	2,944 49	Halifax.....
12 88	.....	.....	.....	.....	12 88	Pictou.....
12 88	2,935 37	1 92	.....	7 20	2,957 37	....*Nova Scotia*.....
.....	496 32	.....	.....	3 60	499 92	Charlottetown, *P.E.I.*
.....	6,740 28	.....	.....	9 60	6,749 88	....*Winnipeg, Man*.....
—.....	656 16	.....	.....	.....	656 16	....*Calgary, Alberta*.....
.....	4 10	.....	.....	.....	4 10	Vancouver.....
.....	1,532 79	.....	.....	5 40	1,538 19	Victoria.....
.....	1,536 89	.....	.....	5 40	1,542 29	....*British Columbia*....
.....	17 37	.....	.....	.....	17 37	..Insp. of Eastern Dom.
.....	337 56	.....	.....	.....	337 56	" Western "
12 88	57 711 12	13 80	90 00	107 79	57,935 59	....Totals.....
200 00	316 12	.....	.....	.....	516 12	General Contingencies...
.....	1,725 18	.....	.....	.....	1,725 18	Printing.....
.....	1,772 11	.....	.....	.....	1,772 11	Stationery.....
212 88	61,524 53	13 80	90 00	107 79	61,949 00	Grand Totals.....

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

TION, 1916-17.

ACCOUNT WITH EXPENDITURES. CR.

Expenditures authorized by the Department.					Balances due by Inspectors, March 31, 1917.	Totals.
Salaries.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
.....	692 82	200 00	272 95	102 69	.....	1,268 46
4,216 57	632 00	65 00	596 85	244 64	.....	5,755 06
4,920 05	429 57	.....	655 20	193 63	.....	6,198 45
4,374 74	2,464 42	429 90	2 00	42 51	.....	7,313 57
10,899 48	180 00	180 00	217 30	201 06	.....	11,677 84
24,410 84	4,398 81	874 90	1,744 30	784 53	.....	32,213 38
8,099 84	66 00	432 00	123 05	151 78	.....	8,872 67
766 58	.....	.....	.....	.....	.....	766 58
499 92	.....	.....	.....	.....	.....	499 92
9,366 34	66 00	432 00	123 05	151 78	.....	10,139 17
99 96	.....	.....	.....	.....	.....	99 96
2,399 88	4 00	.....	287 15	31 50	.....	2,722 53
2,499 84	4 00	.....	287 15	31 50	.....	2,822 49
2,399 88	.....	507 36	18 65	18 60	.....	2,944 49
.....	.....	.....	.....	.....	12 88	12 88
2,399 88	.....	507 36	18 65	18 60	12 88	2,957 37
499 92	.....	.....	.....	.....	.....	499 92
6,749 88	.....	.....	.....	.....	.....	6,749 88
.....	515 02	.....	91 30	49 84	.....	656 16
.....	.....	.....	35	3 75	.....	4 10
1,499 88	4 00	.....	6 20	28 11	.....	1,538 19
1,499 88	4 00	.....	6 55	31 86	.....	1,542 29
.....	.....	.....	.....	17 37	.....	17 37
.....	.....	.....	231 90	105 66	.....	337 56
47,426 58	4,987 83	1,814 26	2,502 90	1,191 14	12 88	57,935 59
.....	.....	.....	.....	316,12	200,00	516 12
.....	.....	.....	.....	1,725 18	.....	1,725 18
.....	.....	.....	.....	1,772 11	.....	1,772 11
47,426 58	4,987 83	1,814 26	2,502 90	5,004 55	212 88	61,949 00

J. U. VINCENT,
Deputy Minister.

ELECTRIC LIGHT INSPECTION, 1916-17.

No. 22.—Inspection Districts in Account with Revenue.

Dr. Cr.

Balances due by Inspectors, April 1, 1916. — Stamps on Hand.	Stamps issued to Inspectors.	Totals.	Districts.	Returned Damaged Stamps.	Deposited to Credit of Receiver General.	Balances due by Inspectors, March 31, 1917. — Stamps on Hand.	Totals.
$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.
5,632 05	.....	5,632 05	Belleville	.....	2,216 40	3,415 65	5,632 05
1,552 35	1,500 00	3,052 35	Fort William	.....	979 50	2,072 85	3,052 35
1,659 10	6,500 00	8,159 10	Hamilton	.....	4,499 70	3,659 40	8,159 10
3,989 35	7,050 00	11,039 35	London	.....	6,523 95	4,515 40	11,039 35
4,060 35	3,600 00	7,660 35	Ottawa	.....	4,568 20	3,092 15	7,660 35
2,714 05	.....	2,714 05	Sudbury	.....	1,558 20	1,155 85	2,714 05
3,546 50	16,325 00	19,871 50	Toronto	.....	11,363 40	8,508 10	19,871 50
23,153 75	34,975 00	58,128 75	*Ontario*	.....	31,709 35	26,419 40	58,128 75
8,098 20	10,750 00	18,848 20	Montreal	.....	13,675 15	5,173 05	18,848 20
1,142 80	2,300 00	3,442 80	Quebec	.....	2,489 05	953 75	3,442 80
736 45	2,300 00	3,036 45	Sherbrooke	.....	903 35	2,133 10	3,036 45
1,066 55	740 00	1,806 55	St. Hyacinthe	.....	927 40	879 15	1,806 55
795 70	1,060 00	1,855 70	Three Rivers	.....	862 15	993 55	1,855 70
11,839 70	17,150 00	28,989 70	*Quebec*	.....	18,857 10	10,132 60	28,989 70
1,118 05	3,175 00	4,293 05	*St. John, N.B.*	.....	1,848 15	2,444 90	4,293 05
1,636 65	2,100 00	3,736 65	*Halifax, N.S.*	.....	2,053 65	1,683 00	3,736 65
1,731 75	.....	1,731 75	*Charlottetown, P.E.I.*	.....	198 00	1,533 75	1,731 75
45,916 90	.....	45,916 90	*Winnipeg, Man.*	.....	2,887 90	43,029 00	45,916 90
4,612 05	.....	4,612 05	*Regina, Sask.*	.....	2,019 80	2,592 25	4,612 05
7,360 80	4,500 00	11,860 80	Calgary	.....	1,926 70	9,934 10	11,860 80
5,080 50	.....	5,080 50	Edmonton	.....	885 90	4,194 60	5,080 50
12,441 30	4,500 00	16,941 30	*Alberta*	.....	2,812 60	14,128 70	16,941 30
3,749 25	7,200 00	10,949 25	Vancouver	.....	6,793 15	4,156 10	10,949 25
2,844 95	1,260 00	4,104 95	Victoria	.....	1,935 90	2,169 05	4,104 95
6,594 20	8,460 00	15,054 20	*British Columbia*	.....	8,729 05	6,325 15	15,054 20
1,350 00	.....	1,350 00	*Dawson, Yukon*	.....	.....	1,350 00	1,350 00
110,394 35	70,360 00	180,754 35		.....	71,115 60	109,638 75	180,754 35
.....	.....	250 00	Export of Electric Power Licenses.	.....	250 00	.....	250 00
.....	.....	101 58	Electrical Standard—Laboratory Fees.	.....	101 58	.....	101 58
110,394 35	70,360 00	181,105 93	Grand Totals	.....	71,467 18	109,638 75	181,105 93

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

ELECTRIC LIGHT INSPECTION, 1916-17.

DR. — No. 23.—INSPECTION DISTRICTS in Account with Expenditures. — CR.

Amounts received from Department to meet Expenditures.	Deduction from salaries for			Totals.	Districts.	Expenditures authorized by the Department.					Balances due by Inspectors, March 31, 1917.	Totals.
	Superannuation.	Retirement.	Guarantee.			Salaries.	Special Assistance	Rent.	Travelling Expenses.	Sundries.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
2,860 43	1 92	.....	10 80	2,873 15	Belleville	1,499 88	1,035 96	.....	287 90	49 41	.....	2,873 15
1,752 85	.....	.....	3 60	1,756 45	Fort William	1,399 92	30 00	.....	220 60	105 93	.....	1,756 45
462 00	.....	.....	.....	462 00	Hamilton	.....	.....	.....	462 00	.....	.....	462 00
829 02	.....	.....	.....	829 02	London	.....	249 99	.....	533 55	45 48	.....	829 02
224 00	.....	.....	.....	224 00	Ottawa	.....	.....	.....	224 00	.....	.....	224 00
1,764 75	.....	.....	41	1,765 16	Sudbury	115 58	497 29	.....	1,098 11	54 18	.....	1,765.16
783 90	.....	.....	.....	783 90	Toronto	.....	.....	.....	741 80	42 10	.....	783 90
749 10	.....	.....	90	750 00	E. A. Kinsman	750 00	.....	.....	.....	.....	.....	750 00
9,426 05	1 92	.....	15 71	9,443 68	.....*Ontario*	3,765 38	1,813 24	.....	3,567 96	297 10	.....	9,443 68
2,675 98	.....	.....	.....	2,675 98	Montreal	.....	2,273 79	.....	337 40	64 79	.....	2,675 98
3,399 30	.....	.....	.....	3,399 30	Quebec	.....	2,154 94	611 25	449 65	183 46	.....	3,399 30
227 85	.....	.....	.....	227 85	Sherbrooke	.....	.....	.....	182 05	45 80	.....	227 85
.....	.....	.....	.....	.....	St. Hyacinthe	.....	.....	.....	.....	.....	.....	.....
974 97	.....	.....	3 60	978 57	Three Rivers	499 92	.....	180 00	285 80	12 85	.....	978 57
7,278 10	.....	.....	3 60	7,281 70	.....*Quebec*	499 92	4,428 73	791 25	1,254 90	306 90	.....	7,281 70
355 01	.....	.....	.....	355 01	.....*St. John, N.B.*	.....	12 00	.....	298 68	44 33	.....	355 01
1,330 17	.....	.....	.....	1,330 17	.....*Halifax, N.S.*	.....	60 00	.....	997 20	272 97	.....	1,330 17
147 76	.....	.....	.....	147 76	.....*Charlottetown, P.E.I.*	.....	60 00	.....	70 30	17 46	.....	147 76
841 30	.....	.....	.....	841 30	.....*Winnipeg, Man.*	.....	.....	533 10	185 10	123 10	.....	841 30
2,399 68	.....	.....	3 60	2,403 28	.....Calgary	1,500 00	514 98	.....	277 60	110 70	.....	2,403 28
1,696 61	.....	.....	3 60	1,700 21	.....Edmonton	1,299 96	.....	.....	282 45	117 80	.....	1,700 21
4,096 29	.....	.....	7 20	4,103 49	.....*Alberta*	2,799 96	514 98	.....	560 05	228 50	.....	4,103 49

ELECTRIC LIGHT INSPECTION, 1916-17.

DR. No. 23.—INSPECTION DISTRICTS in Account with Expenditures—*Concluded.* CR.

Amounts received from Department to meet Expenditures.	Deduction from salaries for			Totals.	Districts.	Expenditures authorized by the Department.					Balances due by Inspectors, March 31, 1917.	Totals.
	Superannuation.	Retirement.	Guarantee.			Salaries.	Special Assistance	Rent.	Travelling Expenses.	Sundries.		
$ cts.	$ cts.	$ cts.	$ cts.	$ cts.		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
3,614 38	.....	.....	3 78	3,618 16	.....*Regina, Sask*.....	2,399 06	.....	.....	1,145 70	171 40	.....	3,618 16
8,528 18	.....	9 96	14 76	8,552 90	Vancouver.....	7,077 38	900 00	.....	369 90	205 62	.....	8,552 90
305 69	.....	.....	.....	305 69	Victoria.....	.....	44 00	.....	150 10	111 59	.....	305 69
8,833 87	.....	9 96	14 76	8,858 59	.....*British Columbia*.....	7,077 38	944 00	.....	520 00	317 21	.....	8,858 59
496 32	.....	.....	3 60	499 92	....*Dawson, Yukon*.....	499 92	.....	.....	.....	.....	.....	499 92
574 60	.....	.....	.....	574 60	.....Chief Electrical Engineer.....	.....	.....	.....	224 45	350 15	.....	574 60
.....	.....	.....	.....	2 70	.... Inspector of Eastern Division..	.....	.....	.....	.....	.....	2 70	2 70
3,198 34	.....	.....	3 60	3,231 94	.... Inspector of Western Division	2,599 92	.....	.....	359 85	242 17	.....	3,201 94
40,192 19	1 92	9 96	52 25	40,259 02	.....Total for Districts, etc..	19,542 54	7,832 95	1,324 35	9,185 19	2,371 29	2 70	40,259 02
3,657 72	.....	.....	.....	3,657 72	.....General Contingencies.....	.....	.....	.....	.....	3,657 72	.....	3,657 72
236 56	.....	.....	.....	236 56	.....Printing.....	.....	.....	.....	.....	236 56	.....	236 56
45 80	.....	.....	.....	45 80	.....Stationery.....	.....	.....	.....	.....	45 80	.....	45 80
.....	.....	.....	.....	.....	.....International Electro-Technical Commission.....	.....	.....	.....	.....	.....	.....	.....
2,286 44	.....	.....	.....	2,286 44	.....Provisional Allowance.....	.....	.....	.....	.....	2,286 44	.....	2,286 44
.....	.....	.....	.....	.....	.....Export of Electric Power.....	.....	.....	.....	.....	.....	.....	.....
46,418 71	1 92	9 96	52 25	46,485 54	..... Grand Total.....	19,542 54	7,832 95	1,324 35	9,185 19	8,597 81	2 70	46,485 54

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

No. 24.—STATEMENT showing the Amounts voted and the Expenditures for each Service for the Year ended March 31, 1917.

Service.	Grants.	Expenditures.	Over Expended.	Under Expended.
	$ cts.	$ cts.	$ cts.	$ cts
Minister's salary	7,000 00	7,000 00		
Departmental salaries	173,250 00	128,431 97		44,818 03
" contingencies	20,000 00	19,327 55		672 45
Excise salaries	575,876 25	492,591 20		83,285 05
" contingencies	90,000 00	80,743 93		9,256 07
War tax contingencies	125,000 00	42,312 65		82,687 35
Special War Act	782 50	782 50		
Duty pay at large distilleries and other factories	16,000 00	13,365 30		2,634 70
Duty pay other than special survey	2,000 00	1,215 05		784 95
Preventive service salaries	101,000 00	84,999 59		16,000 41
" contingencies	15,000 00	11,754 92		3,245 08
Tobacco stamps	130,000 00	82,889 50		47,110 50
Excise commission to custom officers	5,000 00	3,145 71		1,854 29
Tobacco stamps Commission				
Provisional Allowance, Excise	11,000 00	9,526 85		1,473 15
Provisional Allowance, Weights and Measures	4,500 00	4,690 23	190 23	
Provisional Allowance, Gas and Electric Light	4,000 00	2,286 44		1,713 56
Methylated Spirits contingencies	155,000 00	154,788 74		211 26
Minor Expenditures	500 00	131 00		369 00
Weights and Measures salaries	145,250 00	109,951 11		35,298 89
Weights and Measures contingencies	85,000 00	73,229 11		11,770 89
Gas and Electric Light salaries	88,500 00	66,969 12		21,530 88
Gas and Electric Light contingencies	59,000 00	38,963 40		20,036 60
Adulteration of Food salaries and contingencies	45,000 00	41,523 06		3,476 94
Export of Electric Power	1,000 00			1,000 00
International Bureau of Weights and Measures	800 00	216 15		583 85
International Electro Technical Commission	400 00			400 00
Proprietary or Patent Medicines	2,000 00	850 00		1,150 00
Special Translation	291 93	291 93		
Totals	1,863,150 68	1,471,977 01	190 23	391,363 90

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 25.—STATEMENT showing the transactions in connection with the manufacture of Methylated Spirits for the year ended March 31, 1917. CR.

	Amounts.	Totals.
	$ cts.	$ cts.
To Stock on hand March 31, 1916.		
Grain Alcohol, 6,740·26 Proof gal. at 40c.	2,696 10	
Wood Naphtha, 1,213·31 Standard gal. at 87½c.	1,061 65	
Methylated Spirits, 212·34 Standard gal. at 50c.	106 17	
" 622·99 Standard gal. at 85c.	563 54	
Barrels, 144 at $4; Drums, 2 at $10.	596 00	
		5,023 46
To Methylated Spirits sold and unpaid on Mar. 31, 1916:—		
1,072·76 Standard gallons at 83c.	890 39	
3,402·74 " 85c.	2,892 33	
82·73 " 73c.	60 39	
Barrels, 168 at $4; Drums, 11 at $10.	782 00	
		4,625 11
To Disbursements for purchase of materials and as per Statement No. 2:—		
Alcohol, 5,359·15 Proof gal. at 40c, $ 2,143 66		
" 200,670·06 Proof gal. at 45c. 90,301 83		
" 8,362·37 Proof gal. at 55c. 4,599 31		
Barrels, 3,308 at $4. 13,232 00		
Drums, 326 at $6. 1,956 00		
Wood Naphtha, 23,442·44 Standard gal. at 87½c. 20,512 13		
	132,744 93	
Gasolene, 184·9 at 32½c., 45·7 at 33½c., 46·6 at 34½c., 182·5 at 35c., 47 at 35½c., 94·8 at 36½c., 96·6 at 37c., 47·9 at 37½c., 45·7 at 38½c. $ 277 26		
Less empties. 2 10		
	275 16	
To barrels, 2,689 at $4; Drums, 420 at $10. $14,956 00		
Less cartage and freight. 383 53		
	14,572 47	
		147,592 56

	Amounts.	Totals.
	$ cts.	$ cts.
By cash received on account of Methylated Spirits sold during the year ended March 31, 1917, as per details:—		
3,188·62 Standard gallons at 50c.	1,594 20	
41,788·55 " 83c.	34,688 97	
81,813·64 " 85c.	69,540 78	
205·85 " 93c.	191 45	
43,329·34 " 95c.	41,162 77	
246·38 " $1.08.	266 08	
9,607·94 " 1.10.	10,568 72	
Barrels, 6,506 at $4.	26,024 00	
Drums, 396 at $10.	3,960 00	
Drums, 10 at $15.	150 00	
Drums, 326 at $6.	1,956 00	
Cans, 3 at 50c.	1 50	
Cans, 6 at 90c.	5 40	
	190,109 87	
Add amount sold in 1915–16 and not paid:—		
1,072·76 Standard gallons at 83c. $ 890 39		
3,402·74 " 85c. 2,892 33		
82·73 " 73c. 60 39		
Barrels, 168 at $4; Drums, 11 at $10. 782 00		
	4,625 11	
	194,734 98	
Deduct amount sold in 1916–17 and not paid:—		
43·45 Standard gallons at 83c. $ 36 06		
162·76 " 85c. 138 35		
40·88 " 93c. 38 02		
4,003·19 " 95c. 3,803 03		
206·85 " $1.08. 223 39		
4,696·72 " 1.10. 5,166 38		
Barrels, 377 at $4; Drums, 10 at $15. 1,658 00		
	11,063 23	
		183,671 75

To Special assistance	1,258 84		Add alcohol sold	36 48	
Freight	4,692 04		Over remitted on Order No. 25883	0 05	
Sundries	1,111 51				36 53
Printing	121 31				
Stationery	12 48		Deposited to credit Receiver General		183,708 28
		7,196 18			
To other expenses, as follows:—			Stock on hand March 31, 1917:—		
Salaries (paid from Civil Government Salaries	6,250 00		Alcohol, 4,928·92 at 45c	2,218 01	
Salaries (paid from Civil Government Contingencies)	600 00		Wood Naphtha, 864·2 at 87½c	756 17	
		6,850 00	92 barrels at $4	368 00	
					3,342 18
Profit		15,763 15			
Methylated Spirits manufactured during the year—296,929·31 Proof galls.			Alcohol used in manufacture, 252,546·71 Proof galls. Wood Naphtha used in manufacture, 46,528·70 Proof galls.		
Total		187,050 46	Total		187,050 46

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.

STATISTICS

APPENDIX A.—

No. 1.—Return of Manufactures for

Divisions.	Licenses.		Materials Taken for Use.				
			Grain.				
	No.	Fees.	Malt.	Indian Corn.	Rye.	Oats.	Wheat.
		$	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
Belleville, Ont.	1	250	3,158,466	46,451,428	2,877,226	.....	.....
Guelph "	1	250	.....	.....	.....	.....	.....
Hamilton "	1	250	.....	.....	.....	.....	.....
Perth "	4	875	.....	.....	.....	.....	.....
Prescott "	1	250	290,130	5,980,600	885,922	29,780	27,782
Toronto "	2	500	.....	.....	.....	.....	.....
Windsor "	2	500	851,360	12,216,000	2,890,440	101,800	.....
Totals	12	2,875	4,299,956	64,648,028	6,653,588	131,580	27,782
Joliette, Que.	1	250	3,516,592	3,249,624	3,584,394	.....	.....
Montreal "	2	500	.....	.....	.....	.....	.....
St. Hyacinthe "	2	500	152,805	1,549,835	192,835	.....	.....
Totals	5	1,250	3,669,397	4,799,459	3,777,229	.....	.....
Vancouver, B.C.	1	250	.....	.....	.....	.....	.....
Grand Totals	18	4,375	7,969,353	69,447,487	10,430,817	131,580	27,782

No. 2.—Comparative Statement of Manufactures for

1916.							
Ontario	10	2,375	1,866,095	29,360,143	3,664,731	169,130	.....
Quebec	5	1,125	2,997,760	3,645,948	3,268,152	.....	.....
British Columbia	1	250	.....	.....	.....	.....	.....
Totals	16	3,750	4,863,855	33,006,091	6,932,883	169,130	.....
1917.							
Ontario	12	2,875	4,299,956	64,648,028	6,653,588	131,580	27,782
Quebec	5	1,250	3,669,397	4,799,459	3,777,229	.....	.....
British Columbia	1	250	.....	.....	.....	.....	.....
Totals	18	4,375	7,969,353	69,447,487	10,430,817	131,580	27,782

Inland Revenue Department,
Ottawa, July 2, 1917.

SESSIONAL PAPER No. 12

SPIRITS.

the Fiscal Year ended March 31, 1917.

Total Grain.	Molasses.	Used in Spirits Manufactured.		Proof Spirits Manufactured.	Duty Collected ex-manufactory, on Deficiencies and Assessments.		Total Duty Collected ex-manufactory, including License Fees.
		Grain.	Molasses.				
Lbs.	Lbs.	Lbs.	Lbs.	Galls.	Galls.	$ cts.	$ cts.
52,487,120	4,072,840	52,709,058	4,072,840	3,300,140·00	.....	.....	250 00
.....	.....	.....	.....	23 11	47·23	113 35	363 35
.....	.....	.....	.....	.....	25·94	62 26	312 26
.....	.....	.....	.....	.....	19·50	47 20	922 20
7,214,214	.....	7,208,614	.....	436,167·31	.....	.....	250 00
.....	.....	.....	.....	.....	885·38	2,124 91	2,624 91
16,059,600	.....	15,624,600	.....	931,443·08	2,068·12	4,975 54	5,475 54
75,760,934	7,072,840	75,542,272	4,072,840	4,667,773·50	3,046·17	7,323 26	10,198 26
10,350,610	.....	10,315,615	.....	511,912·89	.....	.....	250 00
.....	23,343,876	.....	23,343,876	1,116,769·67	.....	.....	500 00
1,895,475	.....	1,882,665	.....	103,612·88	.....	.....	500 00
12,246,085	23,343,876	12,198,280	23,343,876	1,732,295·44	.....	.....	1,250 00
.....	.....	.....	.....	50·20	33·83	81 19	331 19
88,007,019	27,416,716	87,740,552	27,416,716	6,400,119·14	3,080·00	7,404,45	11,779 45

the Fiscal Years ended March 31, 1916 and 1917.

35,060,099	3,334,166	35,854,099	3,334,166	2,401,258·24	3,334·63	8,004 19	10,379 19
9,911,860	11,550,294	9,959,490	11,550,294	1,048,753·31	.....	.....	1,125 00
.....	.....	.....	.....	.....	731·12	1,754 69	2,004 69
44,971,959	14,884,460	45,813,589	14,884,460	3,450,011·55	4,065·75	9,758 88	13,508 88
75,760,934	4,072,840	75,542,272	4,072,840	4,667,773·50	3,046 17	7,323 26	10,198 26
12,246,085	23,343,876	12,198,280	23,343,876	1,732,295·44	.....	.....	1,250 00
.....	.....	.....	.....	50·20	33·83	81 19	331 19
88,007,019	27,416,716	87,740,552	27,416,716	6,400,119·14	3,080·00	7,404,45	11,779 45

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

No. 3.—STATEMENT showing transactions in the Distilleries in the

Divisions.	In Process, including Deficiencies brought forward.	Manufactured including Surpluses.	Returned to Distillery for Redistillation. In Bond.
	Galls.	Galls.	Galls.
Belleville, Ont.	187,364·26	3,300,140·00	9,141·54
Guelph "	2,449·12	23·11	270·51
Hamilton "	656·98	.....	.....
Perth "	121·10	.....	.....
Prescott "	57,599·98	436,167·31	1,235·54
Toronto "	25,929·74	.....	87,578·22
Windsor "	19,901·57	931,443·08	133,798·87
Totals	294,022·75	4,667,773·50	232,024·68
Joliette, Que.	9,841·79	511,912·89	11,886·66
Montreal "	57,115·41	1,116,769·67	19,760·99
St. Hyacinthe, Que.	19,289·48	103,612·88	1,366·49
Totals	86,246·68	1,732,295·44	33,014·14
Vancouver, B.C.	2,461·84	50·20	117·37
Grand Totals	382,731·27	6,400,119·14	265,156·19

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

SPIRITS—*Continued.*

Dominion of Canada, during the Fiscal Year ended March 31, 1917.

Received from Other Sources.		Totals.	Warehoused.	Fusel Oil Written off.	Deficiencies on which Duty was Collected.	In Process, including Deficiencies carried forward.	Totals.
Duty Paid.	In Bond						
Galls.	Galls.	Galls.	Galls.	Galls.	Galls.	Galls.	Galls.
36·70	.....	3,496,682·50	3,415,163·83	5,621·43	.....	75,897·24	3,496,682·50
1,613·13	.....	4,355·87	1,514·04	313·74	47·23	2,480·86	4,355·87
1,959·13	.....	2,616·11	1,974·90	222·07	25·94	393·20	2·616·11
.....	.....	121·10	73·93	.....	19·50	27·67	121·10
507·44	569·61	496,079·88	474,109·71	1,347·72	.....	20,622·45	496,079·88
1,722·09	.....	115,230·05	100,258·54	1,720·42	885·38	12,365·71	115,230·05
882·90	.....	1,086,026·42	1,023,649;19	.....	2,068·12	60,309·11	1,086,026·42
6,721·39	569·61	5,201,111·93	5,016,744·14	9,225·38	3,046·17	172,096·24	5,201,111·93
.....	.....	533,641·34	516,319·80	.....	.....	17,321·54	533,641·34
.....	.....	1,193,646·07	1,134,179·31	3,716·91	.....	55,749·85	1,193,646·07
97·74	.....	124,366·59	108,568·88	39·34	.....	15,758·37	124,366·59
97·74	.....	1,851,654·00	1,759,067·99	3,756·25	.....	88,829·76	1,851,654·00
6·94	.....	2,636·35	2,602·52	.....	33·83	.....	2,636·35
6,826·07	569·61	7,055,402·28	6,778,414·65	12,981·63	3,080·00	260,926·00	7,055,402·28

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—SPIRITS—*Concluded.*

—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal years ended J

Received from other Divisions.		Totals.	Entered for Consumption.		Removed to other Divisions.	
Removed during year.	In Transit last year.		Quantity.	Duty.	Warehoused in Divisions to which removed.	In Transit.
Gallons.	Gallons.	Gallons.	Gallons.	$ cts.	Gallons.	Gallons.
1,418,445·48	7,439·67	23,556,971·96	1,439,365·49	3,441,182 81	2,642,989·31	146,559·83
1,386,668·90	11,868·78	5,174,250·01	1,339,778·75	3,207,638 81	949,188 29	22,255·66
89,622·22	1,763·38	111,232·80	76,698·78	184,230 75	.....	.....
34,724·08	275·71	40,603·83	34,671·85	83,238 61	188·42	.....
.....	.....	.....	.....	37 31	.....	.....
370,532·11	16,819·48	448,623·84	332,483 68	795,650 38	12,516·57	464 33
108,872·12	343·59	128,093·99	119,778·19	287,641 21	1,038·01	.....
134,791·94	3,517·16	183,016·65	136,484·79	327,718 02	2,172·97	.....
75,442·02	2,674·11	494,642·74	147,492·12	354,058 13	13,082·10	34·68
2,576 80	.....	3,913·60	2,570·75	6,169 77	.....	.....
.....	.....	8,612·54	.....	.....	.....	.....
3,621,175·67	44,701·88	30,149,961·96	3,629,324·40	8,687,565 80	3,621,175·67	169,313 90
2,280,898·53	67,653·78	25,144,924·95	1,350,960·13	3,238,227 99	5,324,973·37	196,540·41
3,387,333·74	50,579·22	7,756,621·19	1,792,791·37	4,295,551 63	1,232,096·87	14,696·13
101,699·27	10,186·74	134,736·86	119,492 07	287,037 62	536 53	.....
33,716·92	6,010·20	45,154·54	40,506·14	97,226 48	2,914·14	.....
487,227·74	14,341·53	553,439·69	367,152·60	876,909 36	22,055·52	1,546·47
153,468·67	5,031·21	165,777·67	153,304·18	368,140 41	4,960·70	3,089 20
32,427·32	8,189·09	66,044·51	32,635·37	78,382 34	2,263·55	.....
128,600·40	7,322·13	448,120·27	258,518·51	620,622 27	18,124·92	560·51
2,553 01	.....	3,895·86	2,787·01	6,689 00	.....	.....
.....	.....	8,612·54	.....	.....	.....	.....
6,607,925·60	169,313·90	34,327,328·08	4,118,147·38	9,868,787 10	6,607,925·60	216,432·78

in the manufacture of Methylated Spirits at Government Warehouse, Ottawa.

Total duty collected ex-manufactory and ex-warehouse..... $8,6

License fees.....

$8,70

APPENDIX A.—SPIRITS—*Continued.*

DR. **No. 4—WAREHOUSE Return for the Fiscal year ended March 31, 1917.** CR.

Divisions.	Remaining in Warehouse from last year.	Warehoused	Imported.	Received from other Divisions. Removed during year.	Received from other Divisions. In Transit last year.	Totals.	Entered for consumption. Quantity.	Entered for consumption. Duty.	Removed to other Divisions. Warehoused in Divisions to which removed.	Removed to other Divisions. In Transit.	Taken for Redistillation.	Free. Legal Allowance.	Free. Other.	Exported.	Used in Bonded Factories.	Remaining in Warehouse.	Totals.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	$ cts.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Belleville, Ont.	1,245,016·29	3,415,163·83		56,056·17	196·09	4,716,432·38	60,759·60	145,887 75	2,855,503·20	120,241·73	9,141·54	21,806 38		191,149·82		1,457,830·11	4,716,432·38
Brantford "	9,991·85			13,785·52		23,777·37	12,914·10	30,999 47	134·46					14·22	9,832·99	881·60	23,777·37
Guelph "	1,643,410·63	1,514·04		20,496·24	1,373·62	1,666,794·53	104,569·08	262,233 47	116,443·27	6,508·80	270·51	49,830·67	1,744·13	40,776·28		1,346,651·79	1,666,794·53
Hamilton "	653,472·09	1,974 90		159,145·85	2,446·41	857,039·25	112,406·14	269,803 22	62,420·13	2,984·07		23,552·13	2,011·54	127,455·14	24,394·66	501,815·44	857,039·25
Kingston "	13,008·12			27,161·03	51·36	40,220·51	17,310·65	41,550 88						73·16	13,693·94	9,142 82	40,220·51
London "	791·72			8,243·36	413·82	9,448·90	8,490 02	20,160 94	650·83							308·05	9,448·90
Ottawa "	20,907·37			156,990·70	3,188 30	181,086·37	155,119·70	372,791 47	3,338·53				319·20			22,308·94	181,086·37
" Government Warehouse	6,740·26			245,448·39	5,359·15	257,547·80							72 17		*252,546·71	4,928·92	257,547·80
" Department Laboratory				38·53		38·53							38·53				38·53
Owen Sound, Ont.	1,665 66			19,109·32		20,774 98									15,140·39	5,634·59	20,774·98
Perth "	97,031·67	73·93	592,397·02	871,661·60	16,854·95	1,578,019·17	60,142·91	136,322 20	19,077·25	4,247·91		1,260·68		751·98	1,469,884·20	22,654·24	1,578,019·17
Peterborough "	128·09			2,872·21	27·99	3,028·29	1,019·45	2,446 67	45·25				1,963·50				3,028·20
Port Arthur "	8,690·37			80,433·76	56·37	89,180·50	66,229·47	158,997 77	13,856·72							9,094 31	89,180·50
Prescott "	938,613·25	474,109·71	65,029·64	2,318·99	14·18	1,480,085·77	52,448·23	145,385 73	774,598·58	209 67	1,235·54	13,760 27	421·80	114,616·56	65,029·64	457,765·54	1,480,085·77
St. Catharines "	387·40			3,293·67		3,681·07	3,681·07	8,834 51									3,681·07
Stratford "	1,119·41			9,043·82	1,576·07	11,739·30	11,607·99	27,528 36		131·31							11,739·30
Toronto "	4,945,674·96	100,258·54	62,600·21	482,997·22	36,095·56	5,627,026·50	472,114·04	1,110,961 70	842,743·09	17,156·00	87,578·22	26,445·55	2,400·80	14,763·03	479,007·77	3,684,878·00	5,627,026·50
Windsor "	7,473,518·75	*33·74 1,023,649 19		81,802·14		8,579,003·82	212,237·68	504,323 85	636,162·06	45,060·92	133,798·87	184,647·57	888·19	797,365·85	37,219·57	6,527,623 11	8,579,003·82
Totals.	17,060,167·89	*33·74 5,016,744·14	719,426·87	2,280,898·53	67,653 78	25,144,924·95	1,350,960·13	3,238,227 99	5,324,973·37	196,540·41	232,024·68	325,303·25	9,859·86	1,286,905·92	*252,546·71 2,114,203·16	14,051,607·46	25,144,924·95
Joliette, Que	981,318·59	‡9·06 516,319·80		5,774·78		1,503,422·23	11,615·00	28,065 67	420,655·14	2,994·81	11,886·66	1,078·31				1,055,192·31	1,503,422 23
Montreal "	1,065,293·96	*21,557·35 1,134,179·31	*143·75 40,569·42	1,150,784·48	43,630·48	3,456,158·75	1,349,884·03	3,212,746 45	690,433·57	10,5·6·59	19,760·99	5,448·27		343·42	156,830·48	1,222,931·40	3,456,158·75
Quebec "	43,815·31			307,191·13	6,286·66	357,293·10	287,434·00	690,464 99							23,390·13	46,468·97	357,293·10
St. Hyacinthe "	335,762·81	108,568·88		1,850,355·52	168·11	2,294,855·32	71,241·34	171,765 16	121,006·16	1,174·73	1,366·49	4,461·75	73·60	149·09	1,812,568·11	282,812·11	2,294,855·32
Sherbrooke "	11,031·38		60,110·04	72,835·11	178·82	144,155·35	71,909·13	190,809 09							60,110·04	12,136 18	144,155·35
Three Rivers "	28·57			392·72	315·15	736·44	707·87	1,700 27								28·57	736·44
Totals.	2,437,250·62	‡9·06 *21,557·35 1,759,067·99	⊕143·75 100,679·46	3,387,333·74	50,579·22	7,756,621·19	1,792,791·37	4,295,551 63	1,232,096·87	14,696·13	33,014·14	10,588·33	73·60	492·45	2,052,898·76	2,619,569·54	7,756,621·19
St. John, N.B.	22,850·85			101,699·27	10,186·74	134,736·86	119,492·07	287,037 62	536·53					13·33	6,827·68	7,867·25	134,736·86
Halifax, N.S.	4,839·31			7,754·96	2,933·75	15,528·02	12,503·64	30,016 35	2,914·14					110·24			15,528·02
Pictou "	588·11			25,961·96	3,076·45	29,626·52	28,002·50	67,210 13								1,624·02	29,626·52
Totals.	5,427·42			33,716·92	6,010·20	45,154·54	40,506·14	97,226 48	2,914·14					110·24		1,624·02	45,154·54
Winnipeg, Man.	51,870·42			487,227·74	14,341·53	553,439·69	367,152·60	876,909 36	22,055·52	1,546·47				16·75	72,607·98	90,060·37	553,439·69
Moosejaw, Sask.	7,277·79			153,468·67	5,031·21	165,777·67	153,304·18	368,140 41	4,960·70	3,089·26						4,423·53	165,777·67
Calgary, Alta.	25,428·10			32,427·32	8,189·09	66,044·51	32,635·37	78,382 34	2,263·55						24,762·22	6,383·37	66,044·51
Vancouver, B.C.	299,590·53	2,602·52		80,536·50	3,463·96	386,202·51	211,536·31	507,794 08	13,756·92	419·10	117·37	3,986·99	227·26	1,461·96	2,382·57	152,314·03	386,202·51
Victoria "	9,976·46		19·23	48,063·90	3,858·17	61,917·76	46,982·26	112,828 19	4,368·00	141·41			71·61	116·76		10,237·78	61,917·76
Totals.	309,575·99	2,602·52	19·23	128,600·40	7,322·13	448,120·27	258,518·51	620,622 27	18,124·92	560·51	117·37	3,986 99	298·87	1,578·72	2,382·57	162,551·81	448,120·27
Dawson, Y.T.	1,342·85			2,553·01		3,895·86	2,787·01	6,689 00								1,108·85	3,895·86
Sundries.	8,612·54					8,612·54										8,612·54	8,612·54
Grand Totals.	19,929,804·47	‡9·06 *21,591·09 6,778,414·65	⊕143·75 820,125·56	6,607,925·60	169,313·90	34,327,328·08	4,118,147·38	9,868,787 10	6,607,925·60	216,432·78	265,156·19	340,278·57	10,232·33	1,289·117·41	*252,546·71 4,273,682·37	16,953,808·74	34,327,328·08

‡ Surplus in Bottling Room. † Used in the manufacture of Methylated Spirits at Government Warehouse, Ottawa.
⊕ Seizure. *Re-Warehoused.

INLAND REVENUE DEPARTMENT,
12—7¾ OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—SPIRITS—*Concluded.*

DR. **No. 5.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal years ended March 31, 1916 and 1917.** CR.

Provinces.	Remaining in Warehouse from last Year.	Warehoused.	Imported.	Received from other Divisions.		Totals.	Entered for Consumption.		Removed to other Divisions.		Taken for Redistillation.	Free.		Exported.	Used in Bonded Factories.	Remaining in Warehouse.	Totals
				Removed during year.	In Transit last year.		Quantity.	Duty.	Warehoused in Divisions to which removed.	In Transit.		Legal Allowance.	Other.				
1916.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	$ cts.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Ontario	19,229,647·28	2,819,812·33	81,627·20	1,418,445·48	7,439·67	23,556,971·96	1,439,365·49	3,441,182 81	2,642,989·31	146,559·83	342,243·16	203,935·23	6,031·39	807,350·69	*161,044·11 / 747,284·86	17,060,167·89	23,556,971·96
Quebec	2,655,948·92	*13·98 / 1,113,044 83	†1,426·27	1,386,668·90	11,868·78	5,174,250·01	1,339,778·75	3,207,638 81	949,188·29	22,255·66	92,511·15	7,914·12	1,903 38	294·85	323,663·79	2,437,250·62	5,174,250·01
New Brunswick	19,847·20			89,622·22	1,763·38	111,232·80	76,698·78	184,230 75					71·44		11,611·73	22,850·85	111,232·80
Nova Scotia	5,604·04			34,724·08	275·71	40,603·83	34,671·85	83,238 61	188·42				316 14			5,427·42	40,603·83
Prince Edward Island								37 31									
Manitoba	61,272·25			370,532·11	16,819·48	448,623·84	332,483 68	795,650 38	12,516·57	464·33			88·61		51,200·23	51,870·42	448,623·84
Saskatchewan	19,378·28			108,872·12	343·59	128,093·99	119,778·19	287,641 21	1,038·01							7,277·79	128,093 99
Alberta	44,707·55			134,791·94	3,517·16	183,016·65	136,484·79	327,718 02	2,172·97						18,930·79	25,428·10	183,016·65
British Columbia	408,273·98	8,247·63		75,442·02	2,674·11	494,642·74	147,492·12	354,058 13	13,082·10	34·68	8,936·00	5,210·46	1,869·98	172·89	8,268·52	309,575·99	494,642·74
Yukon Territory	1,336·80			2,576 80		3,913·60	2,570·75	6,169 77								1,342·85	3,913·60
Sundries	8,612·54					8,612·54										8,612·54	8,612·54
Totals	22,454,633·84	*13·98 / 3,941,104·79	†1,426·27 / 86,905·53	3,621,175·67	44,701·88	30,149,961·96	3,629,324·40	8,687,565 80	3,621,175·67	169,313·90	443,690·31	217,059·81	10,054·80	808,134·57	*161,044·11 / 1,160,359·92	19,929,804·47	30,149,961·96
1917.																	
Ontario	17,060,167·89	†33·74 / 5,016,744·14	719,426·87	2,280,898·53	67,653·78	25,144,924·95	1,350,960·13	3,238,227 99	5,324,973·37	196,540·41	232,024·68	325,303 25	9,859·86	1,286,905·92	*252,546·71 / 2,114,203·16	14,051,607·46	25,144,924·95
Quebec	2,437,250·62	†21,557·35 / 1,759,067·99 / *9 06	143·75 / 100,679·46	3,387,333·74	50,579·22	7,756,621·19	1,792,791·37	4,295,551 63	1,232,096·87	14,696·13	33,014·14	10,988·33	73·60	492·45	2,052,898·76	2,619,569·54	7,756,621·19
New Brunswick	22,850·85			101,699·27	10,186·74	134,736·86	119,492 07	287,037 62	536·53						13·33	6,827·68	7,867·23	134,736·86
Nova Scotia	5,427·42			33,716·92	6,010·20	45,154·54	40,506·14	97,226 48	2,914·14						110·24		1,624 02	45,154·54
Manitoba	51,870·42			487,227·74	14,341·53	553,439·69	367,152·60	876,909 36	22,055·52	1,546·47					16·75	72,607·98	90,060·37	553,439·69
Saskatchewan	7,277·79			153,468·67	5,031·21	165,777·67	153,304·18	368,140 41	4,960·70	3,089 26							4,423·53	165,777·67
Alberta	25,428·10			82,427·32	8,189·09	66,044·51	32,635·37	78,382 34	2,263·55						24,762·22	6,383·37	66,044·51
British Columbia	309,575·99	2,602·52	19·23	128,600·40	7,322·13	448,120·27	258,518·51	620,622 27	18,124·92	560·51	117·37	3,986·99	298·87	1,578·72	2,382 57	162,551·81	448,120·27
Yukon Territory	1,342·85			2,553 01		3,895·86	2,787·01	6,689 00								1,108·85	3,895·86
Sundries	8,612·54					8,612·54										8,612·54	8,612·54
Totals	19,929,804·47	*9·06 / †21,591·09 / 6,778,414·65	†143·75 / 820,125·56	6,607,925·60	169,313·90	34,327,328·08	4,118,147·38	9,868,787 10	6,607,925·60	216,432·78	265,156·19	340,278·57	10,232·33	1,289,117·41	*252,546·71 / 4,273,682·37	16,953,803·74	34,327,328·08

* Surplus in Bottling Room.
† Re-Warehoused.

† Seizure.

* Used in the manufacture of Methylated Spirits at Government Warehouse, Ottawa.

	1916.	1917.
Total duty collected ex-manufactory and ex-warehouse	$8,697,324 68	$9,876,191 55
License fees	3,750 00	4,375 00
	$8,701,074 68	$9,880,566 55

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

March 31, 1916 and 1917. Cr.

Taken for Redistillation.	Free.		Exported.	Used in Bonded Factories.	Remaining in Warehouse.	Totals.
	Legal Allowance.	Other.				
Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
342,243·16	203,935·23	6,031·39	807,350·69	*161,044·11 747,284·86	17,060,167·89	23,556,971·96
92,511·15	7,914·12	1,993·38	294·85	323,663·79	2,437,250·62	5,174,250·01
.....	.....	71·44	.....	11,611·73	22,850·85	111,232·80
.....	.....	.....	316·14	.....	5,427·42	40,603·83
.....	.....	.....	.....	.....	.....	.....
.....	.....	88·61	.....	51,200·23	51,870·42	448,623·84
.....	.....	.....	.....	.....	7,277·79	128,093·99
.....	.....	.....	.....	18,930·79	25,428·10	183,016·65
8,936·00	5,210·46	1,869·98	172·89	8,268·52	309,575·99	494,642·74
.....	.....	.....	.....	.....	1,342·85	3,913·60
.....	.....	.....	.....	.....	8,612·54	8,612·54
443,690·31	217,059·81	10,054·80	808,134·57	*161,044·11 1,160,359·92	19,929,804·47	30,149,961·96
232,024·68	325,303·25	9,859·86	1,286,905·92	*252,546·71 2,114,203·16	14,051,607·46	25,144,924·95
33,014·14	10,988·33	73·60	492·45	2,052,898·76	2,619,369·54	7,756,621·19
.....	.....	.....	13·33	6,827·68	7,867·25	134,736·86
.....	.....	.....	110·24	.....	1,624·02	45,154·54
.....	.....	.....	16·75	72,607·98	90,060·37	553,439·69
.....	.....	.....	.....	.....	4,423·53	165,777·67
.....	.....	.....	.....	24,762·22	6,383·37	66,044·51
117·37	3,986·99	298·87	1,578·72	2,382·57	162,551·81	448,120·27
.....	.....	.....	.....	.....	1,108·85	3,895·86
.....	.....	.....	.....	.....	8,612·54	8,612·54
265,156·19	340,278·57	10,232·33	1,289,117·41	*252,546·71 4,273,682·37	16,953,808·74	34,327,328·08

916.	1917.
7,324 68	$9,876,191 55
3,750 00	4,375 00
1,074 68	$9,880,566 55

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—MALT.

No. 6.—Return of Manufactures for the Fiscal Year ended March 31, 1917.

Divisions.	Licenses.		Grain Steeped.	Grain used in Malt Manufactured.	Malt.			Total Duty Collected ex-manufactory, including License Fees.
	No.	Fees.			Manufactured.	Paid Duty.	Warehoused.	
		$	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	$ cts.
Guelph, Ont..	4	550	4,092,713	4,282,890	3,447,128	225	3,446,903	556 75
Hamilton " ..	2	350	1,014,755	980,935	792,780	.....	792,780	350 00
London " ..	2	400	1,309,615	1,304,215	1,050,640	.....	1,050,640	400 00
Toronto " ..	3	600	1,949,280	2,322,720	1,782,450	.....	1,782,450	600 00
Windsor " ..	1	200	1,108,500	1,108,500	899,150	.....	899,150	200 00
Totals.....	12	2,100	9,474,863	9,999,260	7,972,148	225	7,971,923	2,106 75
Montreal, Que.....	2	400	32,567,040	32,820,740	25,793,220	.....	25,793,220	400 00
Winnipeg, Man.....	3	450	29,352,000	29,642,400	23,648,220	.....	23,648,220	450 00
Calgary, Alta.....	1	200	26,251,900	26,059,900	21,357,800	.....	21,357,800	200 00
Grand Totals...	18	3,150	97,645,803	98,522,300	78,771,388	225	78,771 163	3,156 75

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—MALT—*Continued.*

No. 7.—COMPARATIVE STATEMENT of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

Provinces.	Licenses.		Grain Steeped.	Grain used in Malt Manufactured.	Malt.			Total Duty Collected ex-manufactory, including License Fees.
	No.	Fees.			Manufactured.	Paid Duty.	Warehoused.	
1916.		$	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	$ cts.
Ontario.....	18	2,500	24,472,385	24,965,413	19,483,487	1,047	19,482,440	2,531 41
Quebec.....	5	950	36,333,820	36,906,441	29,191,867	.....	29,191,867	950 00
Manitoba.....	3	550	19,631,675	19,701,275	15,999,787	1,899	15,997,888	606 97
Alberta.....	3	500	12,721,800	11,542,000	9,378,070	.....	9,378,070	500 00
British Columbia....	1	100	.....	.....	.....	.....	.....	100 00
Totals.....	30	4,600	93,159,680	93,115,129	74,053,211	2,946	74,050,265	4,688 38
1917.								
Ontario.....	12	2,100	9,474,863	9,999,260	7,972,148	225	7,971,923	2,106 75
Quebec.....	2	400	32,567,040	32,820,740	25,793,220	.....	25,793,220	400 00
Manitoba.....	3	450	29,352,000	29,642,400	23,648,220	.....	23,648,220	450 00
Alberta.....	1	200	26,251,900	26,059,900	21,357,800	.....	21,357,800	200 00
Totals.....	18	3,150	97,645,803	98,522,300	78,771,388	225	78,771,163	3,156 75

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

DR. No. 8.—WAREHOUSE RETURN for

Remaining in Warehouse from last year.	Warehoused.	Increases.	Received from other Divisions.		Imported.	Totals.	Divisions.
			Removed during year.	In Transit last year.			
Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	
116,855	.....	.....	3,204,600	54,000	180	3,375,635	Belleville, Ont....
164,682	.....	2,722	126,400	.....	.....	293,804	Brantford " ....
2,451,444	3,446,903	28,308	1,445,784	40,000	.....	7,412,439	Guelph " ....
783,281	792,780	11,759	2,174,118	.....	.....	3,761,938	Hamilton, " ....
28,180	.....	651	158,700	.....	.....	187,531	Kingston, " ....
2,101,011	1,050,640	12,167	120,000	.....	.....	3,283,818	London, " ....
.....	.....	.....	803,650	.....	20,080	823,730	Ottawa, " ....
12,800	.....	.....	317,298	10,800	.....	340,898	Owen Sound, " ....
.....	.....	.....	1,140,000	.....	.....	1,140,000	Perth, " ....
97,998	.....	7,252	191,000	.....	.....	296,250	Peterborough, " ....
17,560	.....	.....	660,000	40,000	.....	717,560	Port Arthur, " ....
.....	a1,760	.....	1,605,385	.....	.....	1,607,145	Prescott, " ....
90,000	.....	.....	835,180	40,000	.....	965,180	St. Catharines, " ....
35,783	.....	.....	97,550	.....	.....	133,333	Stratford, " ....
5,637,352	1,782,450	31,424	4,481,600	148,000	54,800	12,135,626	Toronto, " ....
588,690	899,150	2,580	1,585,000	80,000	2,000	3,157,420	Windsor, " ....
12,125,636	7,973,683	96,863	18,946,265	412,800	78,060	39,632,307	....Totals.....
72,052	.....	10,797	3,560,000	40,000	.....	3,682,849	Joliette, Que....
4,462,075	25,793,220	132,141	19,698,238	1,376,000	310,976	51,772,650	Montreal, " ....
.....	.....	.....	1,866,053	60,000	.....	1,926,053	Quebec, " ....
20,000	.....	.....	155,200	.....	.....	175,200	St. Hyacinthe, " ....
29,100	.....	.....	560,000	.....	.....	589,100	Sherbrooke, " ....
.....	.....	.....	100,880	.....	480	101,360	Three Rivers, " ....
4,583,227	25,793,220	142,938	25,950,371	1,476,000	311,456	58,247,212	....Totals.....
.....	.....	.....	880,000	40,000	3,116	923,116	St. John, N.B.....
700	.....	.....	1,778,000	256,000	1,700	2,036,400	Halifax, N.S.....
6,777,146	23,648,220	19,938	3,662	.....	51,112	30,500,078	Winnipeg, Man.....
32,800	.....	466	760,000	80,000	500	873,766	Moosejaw, Sask.....
3,666,386	21,357,800	34,323	650,200	70,000	30,840	25,809,549	Calgary, Alta.....
174,053	.....	.....	4,407,400	130,000	204,735	4,916,188	Vancouver, B.C.....
.....	.....	.....	2,000,000	80,000	.....	2,080,000	Victoria, B.C.....
174,053	.....	.....	6,407,400	210,000	204,735	6,996,188	....Totals.....
4,873	.....	1,346	.....	.....	85,150	91,369	Dawson, Y.T.....
27,364,821	78,772,923	295,874	55,365,898	2,544,800	766,669	165,109,985	....Grand Totals.....

(a) Burnt Barley.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

MALT—*Continued.*

the Fiscal Year ended March 31, 1917. CR.

Entered for Consumption.		Removed to other Divisions.		Exported.	Free.	Written off.	Remaining in Warehouse.	Totals.
Quantity.	Duty.	Warehoused in Divisions to which Removed.	In Transit.					
Lbs.	$ cts.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
3,322,380	99,674 40						53,155	3,375,635
256,404	7,692 12						37,400	293,804
4,367,396	131,021 88	756,930			303,316		1,981,797	7,412,439
2,355,162	70,654 86	1,162,516	34,410			11,860	197,990	3,761,938
187,531	5,625 93							187,531
2,148,983	64,469 49	57,600					1,077,235	3,283,818
823,730	24,711 90							823,730
339,698	10,190 94						1,200	340,898
1,140,000	34,200 00							1,140 000
263,000	7,890 00	33,250						296,250
683,898	20,516 94	3,662					30,000	717,560
1,607,145	48,214 35							1,607,145
891,650	26,749 50						73,530	965,180
133,333	3,999 99							133,333
10,074,705	302,521 15	205,606			191,653		1,663,662	12,135,626
2,020,000	60,600 00				585,690		551,730	3,157,420
30,615,115	918,733 45	2,219,564	34,410		1,080,659	11,860	5,667,699	39,632,307
					3,516,592		166,257	3,682,849
28,068,384	842,051 52	16,977,018	174,000	1,837,192		92,055	4,678,000	51,772,650
1,926,053	57,781 59							1,926,053
175,200	5,256 00							175,200
563,675	16,910 25						25,425	589,100
101,360	3,040 80							101,360
30,834,672	925,040 16	16,977,018	174,000	1,837,192	3,516,592	92,055	4,869,683	58,247,212
923,116	27,693 48							923,116
1,979,100	59,373 00			18,000			39,300	2,036,400
3,334,646	100,039 38	18,780,000	658,000	1,585,160		163,778	5,924,494	30,500,078
784,261	23,527 83						89,505	873,766
3,565,407	103,962 21	17,357,116	1,572,000	448,000			2,967,026	25,809,549
4,742,587	142,277 61	32,200					141,401	4,916,188
2,080,000	62,400 00							2,080,000
6,822,587	204,677 61	32,200					141,401	6,996,188
56,617	1,698 51					208	34,544	91,369
78,815,521	2,364,745 63	55,365,898	2,438,410	3,888,352	4,597,251	267,901	19,733,652	165,109,985

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

DR. No. 9—COMPARATIVE STATEMENT of Warehouse Returns

Remaining in Warehouse from last year.	Warehoused.	Increases.	Received from other Divisions.		Imported.	Totals.	Provinces.
			Removed during year.	In Transit last year.			
Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	1916.
15,856,534	19,482,440	320,106	20,261,840	695,000	568,085	57,184,005	Ontario
13,220,456	29,191,867	267,872	8,895,600	185,000	266,001	52,026,796	Quebec
.....	.....	.....	1,080,000	100,000	2,469	1,182,469	New Brunswick
63,500	.....	.....	3,084,089	54,000	3,550	3,205,139	Nova Scotia
12,458,303	15,997,888	177,723	1,479	.....	17,440	28,652,833	Manitoba
63,840	.....	.....	620,000	40,000	.....	723,840	Saskatchewan
6,231,506	9,378,070	60,748	660,000	60,000	7,600	16,397,924	Alberta
231,793	.....	.....	5,586,000	164,213	452,875	6,434,881	British Columbia
2,495	.....	2,999	.....	.....	61,470	66,964	Yukon Territory
48,128,427	74,050,265	829,448	40,189,008	1,298,213	1,379,490	165,874,851	Totals
							1917.
12,125,636	7,973,683	96,863	18,946,265	412,800	78,060	39,632,307	Ontario
4,583,227	25,793,220	142,938	25,950,371	1,476,000	311,456	58,247,212	Quebec
.....	.....	.....	880,000	40,000	3,116	923,116	New Brunswick
700	.....	.....	1,778,000	256,000	1,700	2,036,400	Nova Scotia
6,777,146	23,648,220	19,938	3,662	.....	51,112	30,500,078	Manitoba
32,800	.....	466	760,000	80,000	500	873,766	Saskatchewan
3,666,386	21,357,800	34,323	650,200	70,000	30,840	25,809,549	Alberta
174,053	.....	.....	6,407,400	210,000	204,735	6,996,188	British Columbia
4,873	.....	1,346	.....	.....	85,150	91,369	Yukon Territory
27,364,821	78,772,923	295,874	55,365,898	2,544,800	766,669	165,109,985	Totals

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

MALT—*Concluded.*

for the Fiscal Years ended March 31, 1916 and 1917. CR.

Entered for Consumption.		Removed to other Divisions.		Exported.	Free.	Written off.	Remaining in Warehouse.	Totals.
Quantity.	Duty.	Warehoused in Divisions to which Removed.	In Transit.					
Lbs.	$ cts.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
38,639,576	1,159,576 21	5,474,835	90,800	.....	847,147	6,011	12,125,636	57,184,005
27,536,789	826,103 67	14,101,600	290,000	2,466,890	2,920,800	27,490	4,583,227	52,026,796
1,182,469	35,474 07	.....	.....	.....	.....	.....	.....	1,182,469
3,172,399	95,171 97	.....	.....	32,040	.....	.....	700	3,205,139
6,186,659	185,599 77	14,765,028	924,000	.....	.....	.....	6,777,146	28,652,833
691,040	20,731 20	.....	.....	.....	.....	.....	32,800	723,840
5,831,793	174,953 79	5,757,545	1,140,000	2,200	.....	.....	3,666,386	16,397,924
6,170,828	185,064 84	90,000	.....	.....	.....	.....	174,053	6,434,881
62,091	1,862 73	.....	.....	.....	.....	.....	4,873	66,964
89,473,644	2,684,611 25	40,189,008	2,544,800	2,501,130	3,767,947	33,501	27,364,821	165,874,851
30,615,115	918,733 45	2,219,564	34,410	.....	1,080,659	11,860	5,667,699	39,632,307
30,834,672	925,040 16	16,977,018	174,000	1,837,192	3,516,592	92,055	4,869,683	58,247,212
923,116	27,693 48	.....	.....	.....	.....	.....	.....	923,116
1,979,100	59,373 00	.....	.....	18,000	.....	.....	39,300	2,036,400
3,334,646	100,059 38	18,780,000	658,000	1,585,160	.....	163,778	5,924,494	30,500,078
784,261	23,527 83	.....	.....	.....	.....	.....	89,505	873,766
3,465,407	103,962 21	17,357,116	1,572,000	448,000	.....	.....	2,967,026	25,809,549
6,822,587	204,677 61	32,200	.....	.....	.....	.....	141,401	6,996,188
56,617	1,698 51	.....	.....	.....	.....	208	34,544	91,369
78,815,521	2,364,745 63	55,365,898	2,438,410	3,888,352	4,597,251	267,901	19,733,652	165,109,985

	1916.	1917.
Total duty collected ex-manufactory and ex-warehouse	$ 2,684,699 63	$ 2,364,752 38
License fees	4,600 00	3,150 00
	$ 2,689,299 63	$ 2,367,902 38

J. U. VINCENT,
Deputy Minister

APPENDIX A—MALT LIQUOR.

No. 10.—Return of Manufacturers for the Fiscal Year ended March 31, 1917.

Divisions.	Licenses. No.	Licenses. Fees.	Malt used.	Other Commodities used.	Malt Liquor manufactured.	Malt Liquor Exported.	Total Duty collected ex-manufactory, including License Fees.
		$	Lbs.	Lbs.	Galls.	Galls.	$ cts.
Belleville, Ont.	1	50	65,256	.....	37,164	.....	50 00
Brantford "	1	50	256,368	.....	127,840	.....	50 00
Guelph "	6	300	4,265,399	244	2,401,373	.....	454 95
Hamilton "	2	100	2,336,724	.....	1,274,376	3,000	100 00
Kingston "	2	100	212,505	.....	89,175	.....	100 00
London "	4	200	2,066,235	.....	950,777	1,727	200 00
Ottawa "	2	100	1,282,785	.....	675,300	.....	100 00
Owen Sound "	4	200	351,998	.....	160,530	.....	200 00
Perth "	1	50	1,173,150	.....	646,544	.....	50 00
Peterborough "	1	50	263,000	.....	106,315	.....	50 00
Port Arthur "	3	150	683,206	.....	369,609	.....	150 00
Prescott "	2	100	1,299,670	.....	754,775	.....	100 00
St. Catharines "	2	100	887,020	.....	483,040	.....	100 00
Stratford "	2	100	144,209	.....	83,750	.....	100 00
Toronto "	8	400	9,785,216	.....	4,692,060	.....	400 00
Windsor "	2	100	1,278,400	.....	646,728	.....	100 00
Totals	43	2,150	26,351,141	244	13,499,356	4,727	2,304 95
Montreal, Que.	9	450	24,189,275	114,880	10,975,888	7,137	28,438 95
Quebec "	3	150	4,307,488	.....	1,790,275	87	150 00
Sherbrooke "	1	50	563,025	.....	322,847	.....	50 00
Three Rivers "	1	50	96,609	.....	46,000	.....	50 00
Totals	14	700	29,156,397	114,880	13,135,010	7,224	28,688 95
St. John, N.B.	2	100	1,021,907	.....	398,536	3,412	100 00
Halifax, N.S.	3	150	1,948,999	.....	713,650	81,929⅔	150 00
Winnipeg, Man.	8	400	2,843,629	17,200	1,666,090	.....	4,254 10
Moosejaw, Sask.	4	200	744,172	.....	380,549	.....	428 75
Calgary, Alta.	7	350	3,074,433	.....	1,820,109	.....	350 00
Vancouver, B.C.	18	900	4,662,982	456,400	2,460,719	14,001⅕	46,348 95
Victoria "	7	350	2,095,682	27,725	852,939	6,020	5,550 45
Totals	25	1,250	6,758,664	484,125	3,313,658	20,021⅕	51,899 40
Dawson, Y.T.	1	50	56,707	.....	22,725	.....	50 00
Grand Totals	107	5,350	71,956,049	616,369	34,949,683	117,313$\frac{13}{16}$	88,226 15

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—MALT LIQUOR—*Continued.*

No. 11.—Comparative Statement of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

Provinces.	Licenses.		Malt used.	Other Commodities used.	Malt Liquor manufactured.	Malt Liquor exported.	Total Duty collected, ex-manufactory, including License Fees.
	No.	Fees.					
1916.		$	Lbs.	Lbs.	Galls.	Galls.	$ cts.
Ontario	48	2,400	37,390,980	.....	17,595,839	1,252	2,400 00
Quebec	14	700	26,058,166	117,710	11,803,736	4,411½	27,749 95
New Brunswick	2	100	1,097,208	.....	427,816	.....	100 00
Nova Scotia	3	150	3,167,115	.....	1,091,450	7,946	150 00
Manitoba	8	400	5,600,558	41,800	2,658,488	.....	9,347 05
Saskatchewan	4	200	745,486	11,000	376,625	.....	2,956 25
Alberta	7	350	5,105,285	18,000	2,534,350	.....	5,797 10
British Columbia	27	1,350	6,266,458	297,325	3,083,631	78	26,653 65
Yukon Territory	1	50	70,591	.....	31,145	.....	50 00
Totals	114	5,700	85,501,847	485,835	39,603,080	13,687½	75,204 00
1917.							
Ontario	43	2,150	26,351,141	244	13,499,356	4,727	2,304 95
Quebec	14	700	29,156,397	114,880	13,135,010	7,224	28,688 95
New Brunswick	2	100	1,021,907	.....	398,536	3,412	100 00
Nova Scotia	3	150	1,948,999	.....	713,650	81,929⅔	150 00
Manitoba	8	400	2,843,629	17,200	1,666,090	.....	4,254 10
Saskatchewan	4	200	744,172	.....	380,549	.....	428 75
Alberta	7	350	3,074,433	.....	1,820,109	.....	350 00
British Columbia	25	1,250	6,758,664	484,125	3,313,658	20,021⅛	51,899 40
Yukon Territory	1	50	56,707	.....	22,725	.....	50 00
Totals	107	5,350	71,956,049	616,369	34,949,683	117,313$\frac{13}{16}$	88,226 15

	1916. Galls.	1917. Galls.
Exported	3,050	103,228⅛
H.M. Army and Navy, and Ships, Stores	10,637½	14,085⅔
	13,687½	117,313$\frac{13}{16}$

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—MALT LIQUOR—*Continued.*

No. 12.—Warehouse Return for the Fiscal Year ended March 31, 1917.

Remaining in Warehouse from Last Year.	Warehoused.	Total.	Division.	Entered for Consumption.		Exported.	Remaining in Warehouse.	Total.
				Quantity.	Duty.			
Galls.	Galls.	Galls.		Galls.	$ cts.	Galls.	Galls.	Galls.
10,842	159,016	169,858	Vancouver, B.C...	139,928	20,989 20	14,002	15,928	169,858

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—MALT LIQUOR—*Concluded.*

No. 13.—Comparative Statement of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917.

Remaining in Warehouse from Last Year.	Warehoused.	Totals.	Province.	Entered for Consumption.		Exported.	Remaining in Warehouse.	Totals.
				Quantity.	Duty.			
Galls.	Galls.	Galls.	1916.	Galls.	$ cts.	Galls.	Galls.	Galls.
50,594	114,706	165,300	British Columbia	150,503	22,575 45	3,955	10,842	165,300
			1917.					
10,842	159,016	169,858	British Columbia.	139,928	20,989 20	14,002	15,928	169,858

	1916.	1917.
Total duty collected ex-manufactory and ex-warehouse	$ 92,079 45	$ 103,865 35
License fees	5,700 00	5,350 00
	$ 97,779 45	$ 109,215 35

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

No. 14.—Return of Manufactures for

Divisions.	Licenses.		Total Weight of Raw Leaf Tobacco and other Materials actually used.	Tobacco at 10c. per lb.		
	No.	Fees.		Manufactured.	Paid Duty.	Warehoused.
		$ cts.	Lbs.	Lbs.	Lbs.	Lbs.
Hamilton, Ont.	1	50 00	1,564,786	1,485,277	578,044	907,233
Toronto, "	3	150 00	140,205¼	142,924	58,759	84,165
Windsor, "	5	250 00	37,536	43,326½	43,326½	.....
Totals	9	450 00	1,742,527¼	1,671,527½	680,129½	991,398
Joliette, Que.	6	275 00	74,147	74,896	74,896	.....
Montreal, "	43	2,075,00	14,214,684½	10,488,006⅗	4,188,213	6,299,793⅘
Quebec, "	5	250 00	3,626,308	3,687,431	3,661,474	25,957
St. Hyacinthe, "	5	250 00	10,192½	10,651	10,651	.....
Sherbrooke, "	1	50 00	3,843,439½	3,981,672½	3,945,803½	35,869
Three Rivers, "	3	150 00	106,682	103,972	103,972	.....
Totals	63	3,050 00	21,875,453½	18,346,629 1/10	11,985,009½	6,361,619⅘
Pictou, N. S.	2	100 00	1,452	1,549½	1,549½	.....
Charlottetown, P.E.I.	6	300 00	209,849	237,323	235,414	1,909
Winnipeg, Man.	2	100 00	1,173	1,107	1,107	.....
Calgary, Alta.	1	50 00	12,513	12,513	12,513	.....
Vancouver, B.C.	1	50 00	102	.....	.....	.....
Grand Totals	84	4,100 00	23,843,069¾	20,270,649 1/10	512,915,722½	7,354,926⅗

Inland Revenue Department,
Ottawa, July 2, 1917.

SESSIONAL PAPER No. 12

TOBACCO.

the Fiscal Year ended March 31, 1917.

Cigarettes at $3 per M.			Cigarettes at $8 per M.			Snuff at 10c. per lb.			Total Duty Collected ex-Manufactory, including License Fees.
Manufactured.	Paid Duty.	Warehoused.	Manufactured.	Paid Duty.	Warehoused.	Manufactured.	Paid Duty.	Warehoused.	
No.	No.	No.	No.	No.	No.	Lbs.	Lbs.	No.	$ cts.
45,018,000	27,270,250	17,747,750	.....	.....	.....	.....	.....	.....	139,665 15
3,600	3,600	.....	.....	.....	.....	.....	.....	.....	6,036 70
.....	.....	.....	.....	.....	.....	.....	.....	.....	4,582 65
45,021,600	27,273,850	17,747,750	.....	.....	.....	.....	.....	.....	150,284 50
.....	.....	.....	.....	.....	.....	.....	.....	.....	7,764 60
1,650,711,620	1,248,166,720	402,544,900	1,724,260	1,417,120	307,140	582,066	576,061	6,005	4,234,339 52
1,286,900	728,100	558,800	.....	.....	.....	31,280	31,280	.....	371,709 70
.....	.....	.....	.....	.....	.....	.....	.....	.....	1,315 10
.....	.....	.....	.....	.....	.....	.....	.....	.....	394,630 35
.....	.....	.....	.....	.....	.....	.....	.....	.....	10,547 20
1,651,998.520	1,248,894,820	403,103,700	1,724,260	1,417,120	307,140	613,346	607,341	6,005	5,020,306 47
.....	.....	.....	.....	.....	.....	.....	.....	.....	254 95
.....	.....	.....	.....	.....	.....	.....	.....	.....	23,841 40
33,000	33,000	.....	.....	.....	.....	.....	.....	.....	309 70
.....	.....	.....	.....	.....	.....	.....	.....	.....	1,301 30
38,000	11,000	27,000	.....	.....	.....	.....	.....	.....	83 00
1,697,091,120	1,276,212,670	420,878,450	1,724,260	1,417,120	307,140	613,346	607,341	6,005	5,196,381 32

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

No. 15.—Comparative Statement of Manufactures for

Provinces.	Licenses.		Total Weight of Raw Leaf Tobbaco and other Materials actually used.	Tobacco at 10c. per lb.		
	No.	Fees.		Manufactured.	Paid Duty.	Warehoused.
1916.		$ cts.	Lbs.	Lbs.	Lbs.	Lbs.
Ontario	7	350 00	2,032,142¾	1,936,854	768,854	1,168,000
Quebec	64	3,200 00	20,793,017¾	18,587,927½	11,978,815	6,609,112½
Nova Scotia	1	50 00	4,769½	5,963½	5,963½	.....
Prince Edward Island	4	200 00	197,926	232,276	231,497	779
Manitoba	2	75 00	462½	348	348	.....
Alberta	3	150 00	9,395	9,395	9,395	.....
British Columbia	2	100 00	5,923	2,382½	2,042	340½
Totals	83	4,125 00	23,043,636½	20,775,146½	12,996,914½	7,778,232
1917.						
Ontario	9	450 00	1,742,527¼	1,671,527½	680,129½	991,398
Quebec	63	3,050 00	21,875,453½	18,346,629 3/10	11,985,009½	6,361,619⅜
Nova Scotia	2	100 00	1,452	1,549½	1,549½	.....
Prince Edward Island	6	300 00	209,849	237,323	235,414	1,909
Manitoba	2	100 00	1,173	1,107	1,107	.....
Alberta	1	50 00	12,513	12,513	12,513	.....
British Columbia	1	50 00	102	.....	.....	.....
Totals	84	4,100 00	23,843,069¾	20,270,649 1/10	2,915,722½	7,354,926⅜

Inland Revenue Department,
Ottawa, July 2, 1917.

SESSIONAL PAPER No. 12

TOBACCO—*Continued.*

the Fiscal Years ended March 31, 1916 and 1917.

Cigarettes at $3 per M.			Cigarettes at $8 per M.			Snuff at 10c. per lb.			Total Duty Collected ex-Manufactory, including License Fees.
Manufactured.	Paid Duty.	Warehoused.	Manufactured.	Paid Duty.	Warehoused.	Manufactured	Paid duty.	Warehoused.	
No.	No.	No.	No.	No.	No.	Lbs.	Lbs.	No.	$ cts.
59,560,420	36,034,950	23,525,470	.....	.....	.....	.....	.....	.....	185,340 25
1,294,634,705	1,023,408,250	271,226,455	1,215,660	1,162,760	52,900	544,987	544,237	750	4,335,032 03
.....	.....	.....	.....	.....	.....	.....	.....	.....	646 35
.....	.....	.....	.....	.....	.....	.....	.....	.....	23,349 70
62,200	62,200	.....	.....	.....	.....	.....	.....	.....	296 40
.....	.....	.....	.....	.....	.....	.....	.....	.....	1,089 50
1,372,450	1,001,950	370,500	650	650	.....	.....	.....	.....	3,315 28
1,355,629,775	1,060,507,350	295,122,425	1,216,310	1,163,410	52,900	544,987	544,237	750	4,549,069 51
45,021,600	27,273,850	17,747,750	.....	.....	.....	.....	.....	.....	150,284 50
1,651,998,520	1,248,894,820	403,103,700	1,724,260	1,417,120	307,140	613,346	607,341	6,005	5,020,306,47
.....	.....	.....	.....	.....	.....	.....	.....	.....	254 95
.....	.....	.....	.....	.....	.....	.....	.....	.....	23,841 40
33,000	33,000	.....	.....	.....	.....	.....	.....	.....	309 70
.....	.....	.....	.....	.....	.....	.....	.....	.....	1,301 30
38,000	11,000	27,000	.....	.....	.....	.....	.....	.....	83 00
1,697,091,120	1,276,212,670	420,878,450	1,724,260	1,417,120	307,140	613,346	607,341	6,005	5,196,381 32

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—TOBACCO—*Continued*—MANUFACTURED BEFORE JUNE 1, 1908.

No. 16.—WAREHOUSE RETURN for the Fiscal Year ended March 31, 1917.

Dr. Cr.

Remaining in Warehouse from last year.	Totals.	Divisions.	Ship Stores.	Remaining in Warehouse.	Totals.
Lbs.	Lbs.		Lbs.	Lbs.	Lbs.
461	461	St. John, N.B		461	461
3,372	3,372	Victoria, B.C	35	3,337	3,372
19,719½	19,719½	Sundries		19,719½	19,719½
23,552½	23,552½	Totals	35	23,517½	23,552½

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—TOBACCO—*Continued*—MANUFACTURED BEFORE JUNE 1, 1908.

No. 17.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917.

Dr. Cr.

Remaining in Warehouse from last year.	Totals.	Provinces.	Entered for Consumption.		Ship Stores.	Remaining in Warehouse.	Totals.
			Quantity.	Duty.			
Lbs.	Lbs.	1916.	$ cts.	Lbs.	Lbs.	Lbs.	Lbs.
461	461	New Brunswick				461	461
3,919½	3,919½	British Columbia	175	43 75	372½	3,372	3,919½
19,719½	19,719½	Sundries				19,719½	19,719½
24,100	24,100	Totals	175	43 75	372½	23,552½	24,100
		1917.					
461	461	New Brunswick				461	461
3,372	3,372	British Columbia			35	3,337	3,372
19,719½	19,719½	Sundries				19,719½	19,719½
23,552½	23,552½	Totals			35	23,517½	23,552½

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

Exported.			Army, Navy and Ship-Stores.				Free and written off.		Taken for R	
bacco.	Cigarettes.	Overweight Cigarettes.	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff.	Tobacco	Cigarettes.	Tobacco.	Cigarettes.
Lbs.	No.	No.	Lbs.	No.	No.	Lbs.	Lbs	No.	Lbs.	No
6,781½	16,221,370	. . .	17,482	15,838,050	500	. .	...	...	13,820	.....
5,120½	137,944,050	....	51,079½	51,342,195	48,400	50	15	50	8,461¼	70,
.....	15,000	.....	3,621	3,437,500	1,000	.....	...	.....	.....	.....
... ..	.....	....	779	.....	.....	.....	....	....	.....	.....
..	.....	. ...	10,035½	9,062,100	.....	490	....	.....	.....	....
.....	.....	....	.. ..	25,500	.....	... .	....	.....	.....	... .
... ..	. .....	....	12,366	7,231,200	. .....	...	....	.....	312	.....
... ..	....	.. ..	.....	.....	.....	...	...	..	.....	.....
0,902	154,210,420	.....	95,363	86,936,545	49,900	540	15	500	22,593¼	70,
5,486	10,479,280	. . .	64,709	43,033,180	39,200	.....	....	2,500	2,039	...
9,575 9/10	248,415,400	1,000	58,920⅘	55,535,810	138,070	665	....	6,800	9,439⅖	53,
.....	. .. .	....	.....	.....	.....	... ..	....	.....	.....	....
.. ....	....	...	13,505	9,481,000	.....	... ..	....	.....	.....	.....
284	... . ..	..	1,625	.....	.....	.....	....	...	.....	.....
.. ...	.. .	. .	37,359	27,482,250	44,300	4,020	...	.....	.....	... .
. ....	... .	. ...	6,351½	4,808,100	9,000	610	....	.....	. .....	.....
.. ....	....	. ....	15,651	11,018,350	10,700	.....	....	....	.....	.....
5,345 9/10	258,894,680	1,000	198,121 3/5	151,358,690	241,270	5,295	...	9,300	11,478⅖	53,

APPENDIX A.—TOBACCO—*Continued.*

No. 18—Warehouse Return for the Fiscal year ended March 31, 1917.

DR.

CR.

Remaining in Warehouse from last Year			Warehoused			Received from other Divisions.								Totals.			Division.	Entered for Consumption.				Removed to other Divisions.							Exported.			Army, Navy and Ship Stores.			Free and written off.	Taken for re-working			Remaining in			Totals		
						Tobacco		Cigarettes.		Overweight Cigarettes.		Snuff										Tobacco		Cigarettes		Overweight Cigarettes.	Snuff																
Tobacco	Cigarettes	Overweight Cigarettes	Snuff	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff	Removed during Year.	In transit last Year.	Removed during Year.	In transit last Year.	Removed during Year.	In transit last Year.	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff					Warehoused in Division from which Removed.	In Transit	Warehoused in Division to which Removed.	In Transit	Warehoused in Division from which Removed.	Warehoused in Division to which Removed.		Tobacco	Cigarettes.	Overweight Cigarettes.	Tobacco	Cigarettes.	Overweight Cigarettes.	Snuff		Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff
Lbs.	No.	No.	Lbs.	Lbs.	No	No.	Lbs.	Lbs.	Lbs.	No	No.	Lbs.	Lbs.	Lbs.	No	No.	Lbs.		Lbs	No.	No.	\$ cts.	Lbs	Lbs.	No.	No	No.	Lbs.	Lbs.	No	No.	Lbs.													
1,000	2,500			987,233	17,741,750			1,055						1,055								165 50																					
								3,215						1,674,125	23,120,890		Belleville, Ont	1,055				83,450 05																					
								1,250		2,788,750				812,419	2,736,050		Hamilton "	812,419				202 00																					
										1,021,750				15,259	4,013,120		London "	2,259				13,450																					
										3 500					5,500		Ottawa "					1,000																					
40								28,245		415,000				28,245	415,040		Owen Sound, Ont					1,000																					
39,493	1,889,000	500		84,145				53,811						26,809			Stratford "	26,809				3,683 00	274																		
240,262	4,473,500	500		901,366	17,747,750					354,183,800	1,146,750	43,500	2,500	168,907	38,219,550	48,000	Toronto "	28,603				3,868 90																		
														107,025	23,740			107,025				16,773 72	640	801	180,050	209,000	2,000														
				126,862	1,465	43,201,170	1,146,750	43,500	2,500					1,310,027	66,071,970	48,000	Totals	978,678	2,736,790			104,087 17	11,501	916	6,170,500	360,000	2,000			15,486	10,479,280		64,700	43,033,170	39,200	2,500	2,039				247,196	4,227,128	5,500	1,319,927	66,871,950	48,500	
550,500	2,674,500			(a) 20										20																											
	547,500			6,270,593	402,544,000	397,140	6,095	17,641	10	7,902,880		2,000		6,873,123	434,180,140	309,140	6,635	Joliette, Que	20				2 00																					
				25,152		559,800		7,586		10,855,000				30,522	11,505,650		Montreal "	6,047,712	26,697,510		34,890	684,912 61	329,584	3,720	104,239,500	1,161,000	123,500	5,050	126,579	248,415,400	1,000	58,920	55,535,610	138,070	665	6,880	9,439	53,500	500	920,315	477,100	8,251,120	11,710	6,987,150	434,189,140	309,140	6,635
				35,963				2,194						38,063			Quebec "	1,672	226,500			328 70	16,728	160	941,350																		
																	Sherbrooke, Que	1,870				187 90	31,905																					
550,500	3,221,500			(a) 20										20																											
				6,331,628		403,103,700	397,140	6,095		18,824,880		2,000		6,944,729	446,144,190	309,140	6,635	Totals	6,051,163	26,834,010		34,890	685,331 21	378,213	3,880	105,180,950	1,161,000	123,500	5,050	126,579	248,415,400	1,000	58,920	55,535,610	138,070	665	6,880	9,439	53,500	500	920,315	477,100	8,251,120	11,710	6,987,150	434,189,140	309,140	6,635
				220										220								22 00																					
																	St. John, N.B.	220																										
				68,344	4,218	9,074,000	300,000							73,618	10,629,000																											
				1,120	1,400									2,370			Halifax, N.S.	97,231				5,723 10	400		40,000																			
				69,264	5,618	9,074,000	300,000							75,987	10,629,000		Totals.	2,965				204 50																					
																		99,236				5,929 60	400		40,000																	
				1,909										1,909																											
																	Charlottetown, P.E.I.																										
7,205	57,500		110	41,184	695	37,073,500	325,000	57,000	4,350	100	48,014	38,645,460	57,000	4,560	Winnipeg, Man	284				1,425																								
																		5	7,600			23 30	9,843		10,280,600			540															
				7,682		5,564,000		9,000		700	7,682	5,564,000	9,000	700	Calgary, Alta	616				61 50	147		170,000			90																		
4,870	434,500																																										
500	294,500			42,929	4,795	11,118,500	870,000	14,000			52,782	12,509,800	14,000		Vancouver, B.C.	33,929	8,700			3,329 00	328		1,345,000	18,500																		
5,370	729,000					129,000					8,566	1,120,000			Victoria "	85,945	2,000			8,461 55			23,000																		
				167		27,000					138,324	13,629,300	14,000		Totals	117,914	10,700			11,733 55	328		1,368,000	18,500																		
569,426	33,253,610	500	110	(b) 7																																						
				(a) 20		420,878,450	307,140	6,095	12,818	123,819,056	2,641,750	125,500	2,500	8,680	100	8,836,868	580,632,860	433,640	11,895	Grand Totals	7,206,331	29,612,100		34,890	809,788 32	400,438	4,800	123,819,050	4,579,100	125,500	5,680	145,345	288,894,680	1,000	198,125	134,268,690	243,270	6250	9,380	11,474	53,500	500	920,570	288,400	10,306,440	33,810	8,536,948	580,632,860	433,640	11,895
7,504,924																																										

(a) Re Warehoused (b) Surplus in Warehouse.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

12—8½

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—TOBACCO—*Concluded.*

N° 19—Comparative Statement of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917

Dr. Cr.

Province	Remaining in Warehouse from last year				Warehoused				Received from other Divisions.												Totals.								Entered for Consumption.				Removed to other Divisions.								Exported			Army, Navy and Ships' Stores.			Free and written off.		Taken for Re-working.			Remaining in Warehouse				Totals.			
									Tobacco.				Cigarettes.				Overweight Cigarettes.		Snuff.																																											
									Removed during year.		In transit last year.		Removed during year.		In transit last year.		Removed during year.		In transit last year.		Tobacco		Cigarettes		Overweight Cigarettes		Snuff		Province	Tobacco		Cigarettes		Overweight Cigarettes		Duty.		Tobacco.				Cigarettes.				Overweight Cigarettes.		Snuff.						Tobacco		Cigarettes		Overweight Cigarettes		Snuff		Tobacco		Cigarettes		Overweight Cigarettes		Snuff	
																																			Warehoused to Distillery.		In Transit		Warehoused to Distillery.		In Transit.		Warehoused to Distillery.		In Transit.																					
Lbs.		No.		No.	Lbs.		No.		Lbs.		Lbs.		No.		No.		No.		Lbs.		Lbs.		No.		No.			Lbs.		No.		$ cts.		Lbs.		Lbs.		No.		No.		No.		Lbs.		Lbs.		No.		No.		Lbs.		No.		No.		Lbs.		No.		Lbs.	
																																	1916.																													
199,141				1,118,000		23,585,120			69,341				15,592,734				1,000				1,458,4.24		39,118,270		1,000			1,117,8183		46,560		771,624 35		4,3483				2,221,000		208,000						17,482		15,838,650		500				13,820						200,262		4,473,300		500		1,436,4823		39,118,270		1,000	
554 476		2,754,450		6,959,1183		271,725 45½		42,000		250			7,289,000				1,000				46,736		4,199,500		1,000			42,061				4,206 10						15,000								3,621		3,442,500		1,000				8,441		70,000				555,580		4,473,300		500		1,933,4833		280,872,805		52,500	750
		250,000											3,009,500								1,000																		

APPE

Cr.

Dr.	-working.		Remaining in Warehouse.				Totals.			
Remain in Wareho from last ye	Overweight Cigarettes.	Snuff.	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff.	Tobacco.	Cigarettes.	Overweight Cigarettes.	Snuff.
Lbs	No.	Lbs	Lbs.	No.	No.	Lbs	Lbs.	No.	No.	Lbs.
4										
3, 19,7			200,202	4,473,300	500		1,436,482½	39,118,220	1,000	
23,8			555,580	24,215,610			6,953,483½	280,869,805	52,900	750
			1,056	652,000			46,738	4,199,500	1,000	
INLAN							779			
			6,200½	3,257,900		110	16,236	12,350,000		600
								25,500		
			5,459½	694,800			130,005½	8,923,500		
							975			
000			768,498	33,293,610	500	110	8,584,699½	345,486,525	54,900	1,350
APPE			247,198½	3,227,120	5,300		1,319,927½	66,671,970	46,500	
500	500	920	313,583	8,956,720	11,210	..	6,944,729½	446,144,190	309,140	6,635
							220			
			2,796	505,000			75,997	10,026,000		
No. 1							1,909			
Dr.			807	876,950	12,700		48,014	38,656,400	57,000	4,560
			569	525,900			7,682½	5,504,000	9,000	700
			5,335	1,214,750	3,300		138,328½	13,630,300	1[illegible],000	
Rema in 500 Wareh fro last y	500	920	570,288½	15,306,440	32,510		8,536,808	580,632,860	435,640	11,895
Lb										
3 19										
24										
3 19										
23										
INLAI										

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—RAW LEAF TOBACCO, INCLUDING

DR. No. 20.—WAREHOUSE RETURN for the

Divisions.	Remaining in Warehouse from last year.	Imported.	Warehoused ex-Factory.	Received from other Divisions.		Totals.
				Removed during year.	In Transit last year.	
	Std. lbs.	Std. lbs.	Std. lbs.	Std. lbs.	Std. lbs.	Std. lbs.
Belleville, Ont.	634	507	.....	441	.....	1,582
Brantford "	8,797	28,610	460	1,974	.....	39,841
Guelph "	6,496	4,042	.....	974	.....	11,512
Hamilton "	2,370,073½	2,074,695	179,896	2,168	1,225	4,628,057½
Kingston "	30,716	23,767	5,876	4,770	.....	65,129
London "	213,726	619,032	79,591	13,615	796	926,760
Ottawa "	249	.....	.....	.....	.....	249
Owen Sound "	2,348	7,300	.....	345	1,506½	11,499½
Peterborough "	791	862	.....	158	.....	1,811
Prescott "	1,001	1,371	.....	379	.....	2,751
St. Catharines "	5,809	3,577	.....	383	.....	9,769
Stratford "	9,519	6,065¼	.....	.....	.....	15,584¼
Toronto "	418,827½	281,997½	18,800	3,296	358½	723,279½
Windsor "	18,556	48,465	.....	33,762	.....	100,783
Totals	3,087,543	3,100,290¾	284,623	62,265	3,886	6,538,607¾
Joliette, Que.	12,652⅞	4,243	.....	16,318½	1,238	34,452⅜
Montreal "	10,642,670	11,388,769½	328,535	132,194½	555	22,492,724
Quebec "	103,058½	589,928	6,982	22,546	.....	722,514½
St. Hyacinthe "	65,711⅙	120,523	52,459	55,799⅕	3,207	297,699⅕
Sherbrooke "	261,808	649,090	363,219	37,085	377	1,311,579
Three Rivers "	1,482	1,039	.....	1,155	.....	3,676
Totals	11,087,382³⁹⁄₄₀	12,753,592½	751,195	265,098⅕	5,377	24,862,645²⁷⁄₄₀
St. John, N.B.	10,574	5,336	.....	.....	.....	15,910
Halifax, N.S.	1,266	2,517	.....	.....	.....	3,783
Pictou "	3,447	1,149	.....	.....	.....	4,596
Totals	4,713	3,666	.....	.....	.....	8,379
Charlottetown, P.E.I.	19,853	1,767	.....	601	.....	22,221
Winnipeg, Man.	14,074	12,139	.....	432	.....	26,645
Moosejaw, Sask.	680	.....	.....	260	.....	940
Calgary, Alta.	15,078	107,233	.....	729	.....	123,040
Vancouver, B.C.	23,647	83,890	5,899	2,431	.....	115,867
Victoria "	7,090	8,549	.....	148	.....	15,787
Totals	30,737	92,439	5,899	2,579	.....	131,654
Grand Totals	14,270,634³⁹⁄₄₀	16,076,463¼	1,041,717	331,964⅕	9,263	31,730,042¹⁷⁄₄₀

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

STEMS, SCRAPS, AND CUTTINGS.

Fiscal Year ended March 31, 1917. CR.

Entered for Consumption.		Removed in Bond to Other Divisions.		Exported.	Written off.	Destroyed.	Entered for Manufacture, free.	Remaining in Warehouse.	Totals.
Quantity.	Duty.	Warehoused in Divisions to which removed.	In Transit.						
Std. lbs.	$ cts.	Std. lbs.	Std. lbs.	Std. lbs.	Std. lb.	Std. lb.	Std. lbs.	Std. lbs.	Std. lbs.
946	264 88	627	.....	.....	.....	9	.....	.....	1,582
23,945	6,704 60	358	.....	460	.....	.....	.....	15,078	39,841
7,404	2,184 00	807	153	.....	.....	.....	.....	3,148	11,512
1,874,536	525,286 86	1,173	.....	300,604	.....	591	29,164	2,421,989½	4,628,057½
37,878	10,638 74	667	311	5,876	.....	.....	.....	20,397	65,129
569,026	166,286 96	47,135	5,261	88,289	.....	25	.....	217,024	926,760
45	12 60	204	.....	.....	.....	.....	.....	.....	249
7,891	2,862 72	.....	.....	.....	.....	.....	.....	3,698½	11,499½
1,358	380 24	.....	.....	.....	.....	.....	.....	453	1,811
2,387	668 36	.....	.....	.....	.....	.....	.....	364	2,751
5,974	1,688 12	432	.....	.....	.....	25	.....	3,338	9,769
8,520¼	2,385 67	1,618	.....	119	.....	.....	.....	5,327	15,584¼
314,946 3/10	92,826 27	108,416⅕	22,770	42,427	598	147	.....	233,975	723,279½
73,078	25,701 48	14,742	299	3,257	.....	.....	.....	9,407	100,783
2,927,934 11/20	837,891 50	176,179⅕	28,794	441,032	598	797	29,164	2,934,109	6,538,607¾
17,453¾	5,246 75	4,806	.....	.....	.....	14	.....	12,179	34,452⅗
12,937,992⅖	3,652,612 23	122,884½	2,822	370,021	55	6,995	598,579	8,453,374⅖	22,492,724
572,490½	160,325 20	5,511	.....	9,117	.....	139	.....	135,257	722,514⅓
158,710	44,824 77	18,240½	4,836 3/10	52,459	.....	.....	.....	63,454	297,699⅘
623,813	174,667 64	1,085	273	363,219	.....	764	.....	322,425	1,311,579
1,957	547 96	.....	.....	.....	.....	.....	.....	1,719	3,676
14,312,416 17/24	4,038,224 55	152,527	7,931 3/10	794,816	55	7,912	598,579	8,988,408⅜	24,862,645 27/40
7,168	2,007 04	.....	.....	.....	.....	.....	.....	8,742	15,910
2,880	806 40	.....	.....	.....	.....	.....	.....	903	3,783
1,353	378 84	601	.....	.....	.....	.....	.....	2,642	4,596
4,233	1,185 24	601	.....	.....	.....	.....	.....	3,545	8,379
3,189	892 92	.....	.....	.....	.....	.....	.....	19,032	22,221
18,195	5,110 00	.....	.....	.....	.....	.....	.....	8,450	26,645
561	157 08	.....	.....	.....	166	.....	.....	213	940
108,949	31,241 70	2,558	4,791	.....	.....	.....	.....	6,742	123,040
75,386	21,961 38	99	.....	5,395	.....	99	1,286	33,602	115,867
12,390	3,845 52	.....	.....	.....	.....	18	.....	3,379	15,787
87,776	25,806 90	99	.....	5,395	.....	117	1,286	36,981	131,654
17,470,422 31/120	4,942,516 93	331,964⅕	41,516 13/10	1,241,243	819	8,826	629,029	12,006,222⅔	31,730,042 17/40

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—RAW LEAF TOBACCO, INCLUDING

DR. No. 21.—COMPARATIVE STATEMENT of Warehouse Returns

Provinces.	Remaining in Warehouse from last year.	Imported.	Warehoused ex-Factory.	Received from other Divisions.		Totals.
				Removed during the year.	In Transit last year.	
1916.	Std. lbs.	Std. lbs.	Std. lbs.	Std. lbs.	Std. lbs.	Std. lbs.
Ontario	3,296,731½	3,177,753¾	244,525	29,039$\frac{19}{20}$	1,152½	6,749,202$\frac{9}{20}$
Quebec	8,302,834$\frac{23}{40}$	16,923,760$\frac{15}{16}$	159,384¾	127,400$\frac{7}{10}$	12,823	25,526,203$\frac{77}{80}$
New Brunswick	12,528	5,705	.....	.....	.....	18,233
Nova Scotia	7,283	5,514	.....	937	.....	13,734
Prince Edward Island	21,254	2,290	.....	.....	.....	23,544
Manitoba	14,369	20,406	3,312	133	.....	38,220
Saskatchewan	2,362	1,057	.....	.....	.....	3,419
Alberta	22,012	78,676	67	672	.....	101,427
British Columbia	51,081	40,770	7,126	2,585	.....	101,562
Totals	11,730,455$\frac{3}{40}$	20,255,932$\frac{7}{16}$	414,414¾	160,767$\frac{13}{20}$	13,975½	32,575,545$\frac{33}{80}$
1917.						
Ontario	3,087,543	3,100,290¾	284,623	62,265	3,886	6,538,607¾
Quebec	11,087,382$\frac{23}{40}$	12,753,592½	751,195	265,098½	5,377	24,862,645$\frac{27}{40}$
New Brunswick	10,574	5,336	.....	.....	.....	15,910
Nova Scotia	4,713	3,666	.....	.....	.....	8,379
Prince Edward Island	19,853	1,767	.....	601	.....	22,221
Manitoba	14,074	12,139	.....	432	.....	26,645
Saskatchewan	680	.....	.....	260	.....	940
Alberta	15,078	107,233	.....	729	.....	123,040
British Columbia	30,737	92,439	5,899	2,579	.....	131,654
Totals	14,270,634$\frac{23}{40}$	16,076,463¼	1,041,717	331,964⅕	9,263	31,730,042$\frac{17}{40}$

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

STEMS, SCRAPS, AND CUTTINGS—*Concluded.*

or the Fiscal Years ended March 31, 1916 and 1917. CR.

Entered for Consumption		Removed in Bond to Other Divisions.		Exported.	Written-off.	Destroyed.	Entered for Manufacture, free.	Remaining in Warehouse.	Totals.
Quantity.	Duty.	Warehoused in Divisions to which removed.	In Transit						
Std. lbs.	$ cts.	Std. lbs.	Std. lbs.	Std. lbs.	Std' lbs.	Std. lbs.	Std. lb.	Std. lbs.	Std. lbs.
2,928,494¼	833,660 21	78,236¼	5,591	485,079	.....	3,194	161,065	3,087,543	6,749,202$\frac{9}{20}$
13,457,041$\frac{9}{20}$	3,789,595 10	80,066$\frac{9}{20}$	3,543	322,892	.....	5,225¾	570,052	11,087,382$\frac{39}{40}$	25,526,203$\frac{77}{80}$
7,659	2,159,92	.....	.....	.....	.....	.....	.....	10,574	18,233
8,782	2,503 06	110	129..	.....	.....	.....	.....	4,713	13,734
3,691	1,033 48	.....	.....	.....	.....	.....	.....	19,853	23,544
20,614	5,914 16	.....	.....	3,454	.....	78	.....	14,074	38,220
2,306	648 48	398	.....	.....	.....	35	.....	680	3,419
83,485	23,588 74	.....	.....	2,653	.....	211	.....	15,078	101,427
59,238	17,654 84	1,957	.....	9,539	.....	921	.....	30,737	101,562
16,571,311$\frac{3}{80}$	4,676,757 99	160,767$\frac{3}{20}$	9,263	823,617	.....	8,834¾	731,117	14,270,634$\frac{39}{40}$	32,575,545$\frac{33}{80}$
2,927,934$\frac{11}{40}$	837,891 50	176,179$\frac{1}{8}$	28,794	441,032	598	797	29,164	2,934,109	6,538,607¾
14,312,416$\frac{17}{40}$	4,038,224 55	152,527	7,931$\frac{3}{10}$	794,816	55	7,912	598,579	8,988,408$\frac{2}{5}$	24,862,645$\frac{27}{40}$
7,168	2,007 04	.....	.....	.....	.....	.....	.....	8,742	15,910
4,233	1,185 24	601	.....	.....	.....	.....	.....	3,545	8,379
3,189	892 92	.....	.....	.....	.....	.....	.....	19,032	22,221
18,195	5,110 00	.....	.....	.....	.....	.....	.....	8,450	26,645
561	157 08	.....	.....	.....	166	.....	.....	213	940
108,949	31,241 70	2,558	4,791	.....	.....	.....	.....	6,742	123,040
87,776	25,806 90	99	.....	5,395	.....	117	1,286	36,981	131,654
17,470,422$\frac{31}{120}$	4,942,516 93	331,964$\frac{1}{5}$	41,516$\frac{3}{10}$	1,241,243	819	8,826	629,029	12,006,222$\frac{2}{3}$	31,730,042$\frac{17}{40}$

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—OTHER MATERIALS.

No. 22.—Warehouse Return for the Fiscal Year ended March 31, 1917.

Dr. Cr.

Remaining in Warehouse from last year.	Warehoused	Totals.	Divisions.	Entered for Consumption.		Remaining in Warehouse.	Totals.
				Quantity.	Duty.		
Lbs.	Lbs.	Lbs.		Lbs.	$ cts.	Lbs.	Lbs.
916,748	2,181,019	3,097,767	Montreal, Que..	1,548,075	247,692 00	1,549,692	3,097,767
.....	734	734	Pictou, N.S.....	734	117 44	.....	734
916,748	2,181,753	3,098,501	Grand Totals.	1,548,809	247,809 44	1,549,692	3,098,501

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—OTHER MATERIALS—*Concluded.*

No. 23.—Comparative Statement of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917.

Dr. Cr.

Remaining in Warehouse from last year.	Warehoused	Totals.	Provinces.	Entered for Consumption.		Remaining in Warehouse.	Totals.
				Quantity.	Duty.		
Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	$ cts.	Lbs.	Lbs.
99,319	2,182,604	2,281,923	Quebec.....	1,365,175	218,428,00	916,748	2,281,923
			1917.				
916,748	2,181,019	3,097,767	Quebec.....	1,548,075	247,692 00	1,549,692	3,097,767
.....	734	734	Nova Scotia...	734	117 44	.....	734
916,748	2,181,753	3,098,501	Totals.....	1,548,809	247,809 44	1,549,692	3,098,501

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—CANADA TWIST TOBACCO.

No. 24.—STATEMENT of Revenue collected from Canada Twist Tobacco for the Fiscal Year ended March 31, 1917.

Divisions.	Licenses.		Canada Twist, at 10 cts. per lb.	Total Duty Collected, including License Fees.
	No.	Fees.		
		$	Lbs.	$ cts.
Ottawa, Ont.	3	6	50	11 00
Prescott, "	1	2	830	85 00
Totals	4	8	880	96 00
Montreal, Que.	15	30	4,805	510 50
Grand Totals	19	38	5,685	606 50

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CANADA TWIST TOBACCO—*Concluded.*

No. 25.—COMPARATIVE STATEMENT for the Fiscal Years ended March 31, 1916 and 1917.

Provinces.	Licenses.		Canada Twist, at 10 cts. per lb.	Total Duty Collected, including License Fees.
	No.	Fees.		
1916.		$	Lbs.	$ cts.
Ontario	6	12	1,470	159 00
Quebec	19	38	5,960	634 00
Totals	25	50	7,430	793 00
1917.				
Ontario	4	8	880	96 00
Quebec	15	30	4,805	510 50
Totals	19	38	5,685	606 50

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CIGARS.

No. 26.—RETURN of Manufactures for the Fiscal Year ended March 31, 1917.

Divisions.	Licenses.		Total Raw Leaf Tobacco and other materials actually used.	Deficiencies Paying Duty.	Cigars at $4.00 per Thousand.			Cigars at $3.00 per Thousand.			Total Duty collected ex-manufactory, including License Fees.
	No.	Fees.		Cigars.	Manufactured.	Paid Duty.	Warehoused.	Manufactured.	Paid Duty.	Warehoused.	
		$ cts.	Lbs.	No.	No.	No.	No.	No.	No.	No.	$ cts.
Belleville, Ont.	1	50 00	913					48,550	28,250	20,300	134 75
Brantford "	4	200 00	31,606	4,495	1,200	1,200		1,666,735	775,550	891,185	2,544 94
Guelph "	9	400 00	19,738					1,036,850	638,150	398,700	1,314 46
Hamilton "	9	450 00	296,014	207,743	15,350		15,350	13,590,065	5,247,915	8,342,150	16,817 09
Kingston "	3	150 00	50,023					2,501,515	1,489,790	1,011,725	4,619 37
London "	31	1,525 00	584,555	134,291				29,383,970	23,159,005	6,224,965	71,405 33
Owen Sound "	1	50 00	17,228					828,000	426,800	401,200	1,330 40
Perth "				1,818							5 46
Peterborough "	2	100 00	1,858					86,325	85,325	1,000	355 98
Prescott "	2	100 00	6,532					340,700	337,200	3,500	1,111 60
St. Catharines "	8	400 00	17,679					1,000,050	960,000	40,050	3,280 00
Stratford "	4	200 00	16,689¼	1,743				827,630	553,530	274,100	1,865 84
Toronto "	20	1,000 00	334,306¼	16,285				17,000,760	12,851,140	4,149,620	39,602 57
Windsor "	7	350 00	161,201		1,200	1,200		6,852,415	6,725,390	127,025	20,581 04
Totals	101	4,975 00	1,538,342½	366,375	17,750	2,400	15,350	75,163,565	53,278,045	21,885,520	165,918 83
Joliette, Que.	9	375 00	117,341	1,515				7,103,125	5,186,545	1,916,580	15,939 20
Montreal "	39	1,925 00	2,177,373	204,455	18,899	15,899	3,000	119,142,945	83,792,780	35,350,165	253,980 56
Quebec "	2	100 00	86,646					5,200,545	2,452,010	2,748,535	7,456 06
St. Hyacinthe "	9	450 00	185,097	150	88,950	88,950		10,265,470	5,387,820	4,877,650	16,969 71
Sherbrooke "	7	350 00	127,364		300		300	6,425,510	3,868,195	2,557,315	11,954 61
Three Rivers "	4	200 00	9,404	15,944				589,050	472,400	116,650	1,665 03
Totals	70	3,400 00	2,703,225	222,064	108,149	104,849	3,300	148,726,645	101,159,750	47,566,895	307,965 17

St. John, N.B.	2	100 00	30,328	.....	.....	.....	.....	1,803,050	178,500	1,624,550	635 50
Halifax, N.S.	3	150 00	12,781	.....	.....	.....	.....	681,785	507,115	174,670	1,671 34
Pictou "	1	50 00	3,136	.....	.....	.....	.....	154,150	154,150	.....	512 45
Totals	4	200 00	15,917	.....	.....	.....	.....	835,935	661,265	174,670	2,183 79
Winnipeg, Man.	10	475 00	46,315	23,000	3,825	3,825	.....	2,186,475	1,824,650	361,825	6,033 27
Moose Jaw, Sask.	1	50 00	658	997	.....	.....	.....	26,675	26,675	.....	133 01
Calgary, Alta.	9	425 00	101,701	37,135	8,400	8,400	.....	4,634,190	4,626,690	7,500	14,450 07
Vancouver, B.C.	15	750 00	67,982	8,126	900	900	.....	3,469,085	3,449,085	20,000	11,125 26
Victoria "	9	450 00	12,819	1,241	.....	.....	.....	663,125	663,125	.....	2,443 10
Totals	24	1,200 00	80,801	9,367	900	900	.....	4,132,210	4,112,210	20,000	13,568 36
Grand Totals	221	10,825 00	4,517,287½	658,938	139,024	120,374	18,650	237,508,745	165,867,785	71,640,960	510,888 00

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CIGARS—*Continued.*

No. 27.—Comparative Statement of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

Divisions.	Licenses.		Total Raw Leaf Tobacco and other materials actually used.	Deficiencies Paying Duty.	Cigars at $4.00 per Thousand.			Cigars at $3.00 per Thousand.			Total Duty collected ex-manufactory, including License Fees.
	No.	Fees.		Cigars.	Manufactured.	Paid Duty.	Warehoused.	Manufactured.	Paid Duty.	Warehoused.	
1916.		$ cts.	Lbs.	No.	No.	No.	No.	No.	No.	No.	$ cts.
Ontario	114	5,550 00	1,434,728¾	116,467	18,105	17,055	1,050	71,457,745	47,036,395 *550	24,420,800	147,079 08
Quebec	75	3,625 00	2,258,858¾	41,710	84,381	78,081	6,300	126,338,850	78,424,040	47,914,810	239,335 34
New Brunswick	2	100 00	35,545					2,004,100	163,000	1,841,100	589 00
Nova Scotia	4	200 00	17,606					934,470	707,560	226,910	2,322 68
Manitoba	12	600 00	41,773	20,880				2,058,465	1,642,715	415,750	5,590 83
Saskatchewan	4	200 00	3,003	14,009				121,500	121,500		606 53
Alberta	8	400 00	77,758	6,692	3,600	3,600		3,768,485	3,751,485	17,000	11,688 92
British Columbia	28	1,375 00	55,360	7,914	2,100	2,100		2,837,155	2,837,155		9,918 62
Totals	247	12,050 00	3,924,632½	207,672	108,186	100,836	7,350	209,520,770	134,683,850 *550	74,836,570	417,131 00

1917.											
Ontario	101	4,975 00	1,538,342½	366,375	17,750	2,400	15,350	75,163,565	53,278,045	21,885,520	165,918 83
Quebec	70	3,400 00	2,703,225	222,064	108,149	104,849	3,300	148,726,645	101,159,750	47,566,895	307,965 17
New Brunswick	2	100 00	30,328	.....	.....	.....	.....	1,803,050	178,500	1,624,550	635 50
Nova Scotia	4	200 00	15,917	.....	.....	.....	.....	835,935	661,265	174,670	2,183 79
Manitoba	10	475 00	46,315	23,000	3,825	3,825	.....	2,186,475	1,824,650	361,825	6,033 27
Saskatchewan	1	50 00	658	997	.....	.....	.....	26,675	26,675	.....	133 01
Alberta	9	425 00	101,701	37,135	8,400	8,400	.....	4,634,190	4,626,690	7,500	14,450 07
British Columbia	24	1,200 00	80,801	9,367	900	900	.....	4,132,210	4,112,210	20,000	13,568 36
Totals	221	10,825 00	4,517,287½	658,938	139,024	120,374	18,650	237,508,745	165,867,785	71,640,960	510,888 00

*Destroyed by fire.

Memo:

Total number of cigars manufactured—

1916 209,628,956
1917 237,647,769

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—CIGARS—*Continued.*

DR. No. 28.—WAREHOUSE RETURN for the Fiscal Year ended March 31, 1917. CR.

Remaining in Warehouse from last year.	Warehoused.	Received from other Divisions.		Totals.	Divisions.		Entered for Consumption.		Removed to other Divisions.		Army, Navy, and ship-stores.	Exported.	Re-worked.	Remaining in Warehouse.	Totals.
		Removed during the year.	In Transit last year.				Quantity.	Duty.	Warehoused in Divisions to which Removed	In Transit					
No.	No.	No.	No.	No.			No.	$ cts.	No.	No.	No.	No.	No.	No.	No.
42,450	20,300	.....	.....	62,750	Belleville,	Ont.	58,750	176 25	.....	.....	4,000	.....	.....	.....	62,750
1,256,285	891,185	.....	.....	2,147,470	Brantford,	"	1,277,970	3,833 91	.....	.....	10,000	.....	.....	859,500	2,147,470
180,250	398,700	.....	.....	578,950	Guelph,	"	466,900	1,400 70	.....	.....	.....	.....	.....	112,050	578,950
1,240,000	8,357,500	2,191,375	.....	11,788,875	Hamilton,	"	10,175,600	30,528 80	400,000	.....	262,700	19,475	6,200	924,900	11,788,875
425,025	1,011,725	.....	.....	1,436,750	Kingston,	"	948,500	2,845 50	.....	.....	130,675	.....	.....	357,575	1,436,750
2,188,045	6,224,965	75,000	.....	8,488,010	London,	"	6,361,000	19,083 02	368,500	.....	258,320	.....	.....	1,500,190	8,488,010
112,275	401,200	.....	.....	513,475	Owen Sound,	"	445,250	1,335 75	.....	.....	.....	.....	.....	68,225	513,475
72,300	.....	.....	.....	72,300	Perth,	"	72,300	216 90	.....	.....	.....	.....	.....	.....	72,300
.....	1,000	.....	.....	1,000	Peterborough,	"	.....	.....	.....	.....	1,000	.....	.....	.....	1,000
.....	2,500	.....	.....	2,500	Prescott,	"	.....	.....	.....	.....	2,500	.....	.....	.....	2,500
15,000	40,050	.....	.....	55,050	St. Catharines,	"	24,050	72 15	.....	.....	8,000	.....	.....	23,000	55,050
47,650	274,100	.....	.....	321,750	Stratford,	"	286,200	858 60	.....	.....	.....	.....	.....	35,550	321,750
1,165,430	4,149,620	121,550	12,500	5,449,100	Toronto,	"	4,002,625	12,007 91	34,500	7,300	468,850	.....	.....	935,825	5,449,100
259,400	127,025	.....	.....	386,425	Windsor,	"	141,500	424 50	.....	.....	.....	.....	.....	244,925	386,425
7,004,110	21,899,870	2,387,925	12,500	31,304,405	Totals.....		24,260,645	72,783 99	803,000	7,300	1,146,045	19,475	6,200	5,061,740	31,304,405
897,295	1,916,580	.....	.....	2,813,875	Joliette,	Que.	2,147,065	6,441 23	205,150	.....	.....	.....	.....	461,660	2,813,875
8,080,925	35,353,165	4,620,550	126,650	48,181,290	Montreal,	"	36,672,855	110,021 60	2,487,000	46,500	426,000	.....	.....	8,548,935	48,181,290
923,550	2,748,535	.....	.....	3,672,085	Quebec.	"	2,859,685	8,579 05	.....	.....	21,250	.....	.....	791,150	3,672,085
886,800	4,877,650	.....	.....	5,764,450	St. Hyacinthe,	"	1,295,850	3,893,85	4,164,400	294,200	10,000	.....	.....	.....	5,764,450
1,891,110	2,557,615	.....	.....	4,448,725	Sherbrooke,	"	3,314,010	9,942 39	.....	.....	13,500	2,500	.....	1,118,715	4,448,725
76,450	116,650	.....	.....	193,100	Three Rivers,	"	172,500	517 50	.....	.....	.....	.....	.....	20,600	193,100
12,756,130	47,570,195	4,620,550	126,650	65,073,525	Totals.....		46,461,965	139,395 62	6,856,550	340,700	470,750	2,500	.....	10,941,060	65,073,525
704,050	1,624,550	.....	.....	2,328,600	St. John, N.B.....		1,632,700	4,898 10	.....	.....	4,000	.....	.....	691,900	2,328,600

133,155	174,670	.....	.....	307,825	Halifax, N.S.....	258,400	775 20	.....	.....	10,000	.....	.....	39,425	307,825
71,300	361,825	570,000	8,500	1,011,625	Winnipeg, Man.....	429,800	1,289 41	112,425	.....	331,525	.....	.....	136,875	1,011,625
.....	7,500	103,000	.....	110,500	Calgary, Alta.....	.....	.....	.....	.....	94,400	.....	.....	16,100	110,500
23,800	20,000	86,300	10,000	140,100	Vancouver, B.C....	61,645	184 94	5,000	.....	56,075	.....	.....	17,380	140,100
4,600	.....	12,500	.....	17,100	Victoria, B.C.....	.....	.....	2,300	.....	8,400	.....	.....	6,400	17,100
.....	.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....	.....	.....
28,400	20,000	98,800	10,000	157,200	Totals.....	61,645	184 94	7,300	.....	64,475	.....	.....	23,780	157,200
20,697,145	71,658,610	7,780,275	157,650	100,293,680	Grand Totals...	73,105,155	219,327 26	7,780,275	348,000	2,121,195	21,975	6,200	16,910,880	100,293,680

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

DR. No. 29.—COMPARATIVE STATEMENT of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917. CR.

Remaining in Warehouse from last year.	Warehoused.	Received from other Divisions.		Totals.	Divisions.	Entered for Consumption.		Removed to other Divisions.		Army, Navy, and Ship-Stores.	Exported.	Re-worked.	Remaining in Warehouse.	Totals.
		Removed during the year.	In Transit last year.			Quantity.	Duty.	Warehoused in Divisions to which removed	In Transit.					
No.	No.	No.	No.	No.	1916.	No.	$ cts.	No.	No.	No.	No.	No.	No.	No.
7,886,850	24,421,850	1,508,000	.....	33,816,700	Ontario	26,398,390	79,210 48	84,000	6,000	313,075	11,125	.....	7,004,110	35,816,700
9,979,055	47,921,110	2,833,300	109,800	60,843,265	Quebec	43,345,235	130,080 87	4,392,300	151,650	197,950	.....	.....	12,756,130	60,843,265
865,350	1,841,100	.....	.....	2,706,450	New Brunswick	1,998,400	5,995 20	.....	.....	4,000	.....	.....	704,050	2,706,450
166,345	226,910	.....	.....	393,255	Nova Scotia	259,300	777 90	.....	.....	800	.....	.....	133,155	393,255
208,525	415,750	70,000	.....	694,275	Manitoba	562,125	1,686 38	.....	.....	60,850	.....	.....	71,300	694,275
.....	17,000	.....	.....	17,000	Alberta	17,000	51 00	.....	.....	.....	.....	.....	.....	17,000
86,100	.....	73,000	.....	159,100	British Columbia	75,000	225 00	8,000	.....	47,700	.....	.....	28,400	159,100
19,192,225	74,843,720	4,484,300	109,800	98,630,045	Totals	72,655,450	218,026 83	4,484,300	157,650	624,375	11,125	.....	20,697,145	98,630,045
					1917.									
7,004,110	21,899,870	2,387,925	12,500	31,304,405	Ontario	24,260,645	72,783 99	803,000	7,300	146,045	19,475	6,200	5,061,740	31,304,405
12,756,130	47,570,195	4,620,550	126,650	65,073,525	Quebec	46,461,965	139,395 62	6,856,550	340,700	470,750	2,500	.....	10,941,060	65,073,525
704,050	1,624,550	.....	.....	2,328,600	New Brunswick	1,632,700	4,898 10	.....	.....	4,000	.....	.....	691,900	2,328,600
133,155	174,670	.....	.....	307,825	Nova Scotia	258,400	775 20	.....	.....	10,000	.....	.....	39,425	307,825
71,300	361,825	570,000	8,500	1,011,625	Manitoba	429,800	1,289 41	113,425	.....	331,525	.....	.....	136,875	1,011,625
.....	7,500	103,000	.....	110,500	Alberta	.....	.....	.....	.....	94,400	.....	.....	16,100	110,500
28,400	20,000	.....	10,000	157,200	British Columbia	61,645	184 94	7,300	.....	64,475	.....	.....	23,780	157,200
20,697,145	71,658,610	7,780,275	157,650	100,293,680	Totals	73,105,155	219,327 26	7,780,275	348,000	2,121,195	21,975	6,200	16,910,880	100,293,680

	1916.	1917.
Total duty collected, ex-manufactory and ex-warehouse	$ 623,107 83	$ 719,390 26
Licenses fees	12,050 00	10,825 00
Totals	$ 635,157 83	$ 730,215 26

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

SESSIONAL PAPER No. 12

APPENDIX A.—INSPECTION OF PETROLEUM.

No. 30.—RETURN of Inspected Petroleum and Naphtha shipped from Refineries during the Fiscal Year ended March 31, 1917.

Divisions.	Licenses.		Petroleum.	Naphtha.	Totals.
	No.	Fees.			
		$	Galls.	Galls.	Galls.
London, Ont.	3	3	27,679,747·15	24,569,570·99	52,249,318·14
Toronto "	2	2	2,272,670·00	2,697,022·00	4,969,692·00
Totals	5	5	29,952,417·15	27,266,592·99	57,219,010·14
Moosejaw, Sask.	1	1	1,911,064·50	2,395,926·20	4,306,990·70
Calgary, Alta.	3	3	2,447·00	42,715·25	45,162·25
Vancouver, B.C.	1	1	3,970,409·70	11,277,035·50	15,247,445·20
Grand Totals	10	10	35,836,338·35	40,982,269·94	76,818,608·29

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—INSPECTION OF PETROLEUM—*Concluded.*

No. 31.—COMPARATIVE STATEMENT of Inspected Petroleum and Naphtha shipped from Refineries during the Fiscal Years ended March 31, 1916 and 1917.

Provinces.	Licenses.		Petroleum.	Naphtha.	Totals
	No.	Fees.			
1916.		$	Galls.	Galls.	Galls.
Ontario	5	5	33,133,893·11	24,570,547·88	57,704,440·99
British Columbia	1	1	1,641,661·70	4,668,296·10	6,309,957·80
Totals	6	6	34,775,554·81	29,238,843·98	64,014,398·79
1917.					
Ontario	5	5	29,952,417·15	27,266,592·99	57,219,010·
Saskatchewan	1	1	1,911,064·50	2,395,926·20	4,306,990·14
Alberta	3	3	2,447·00	42,715·25	45,162·70
British Columbia	1	1	3,970,409·70	11,277,035·50	15,247,445·25
Totals	10	10	35,836,338·35	40,982,269·94	76,818,608·20—29

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

No. 32.—RETURN of Manufactures

Divisions.	Licenses.		Materials Used.			
	No.	Fees.	Spirits.	Beer, Wine, etc.	Nitric Acid.	Mercury.
		$ cts.	Galls.	Galls.	Lbs.	Lbs.
Brantford, Ont.	1	50 00	9,832·99	141·60	*	
Guelph "	1	50 00				
Hamilton "	3	400 00	24,394·66	250·40		
Kingston "	2	100 00	13,693·94	140·48		
Owen Sound "	1	50 00	15,140·39	128·50		
Perth "	5	600 00	1,489,329·30			
Prescott "	1	300 00	65,029·64		319,969	34,847
Stratford "	1	50 00				
Toronto "	17	1,075 00	479,007·77	2,882·70		
Windsor "	1	550 00	39,219·57	259·46		
Totals	43	3,225 00	2,135,648·26	3,661·54 141·60	319,969 *	34,847
				770·83	†	
Montreal, Que.	19	1,400 00	156,830·48	340·50		
				959·40	†	
Quebec "	3	150 00	23,390·13	512·00		
St. Hyacinthe "	1	300 00	1,812,568·11			
Sherbrooke "	1	300 00	60,110·04		280,717	36,900
Totals	24	2,150 00	2,052,898·76	1,430·23 852·50	† 280,717	36,900
St. John, N.B.	1	50 00	6,827·68	19·20		
				812·81	†	
Winnipeg, Man.	10	500 00	72,607·98	20·90		
Calgary, Alta.	2	100 00	24,762·22	542·40		
Vancouver, B.C.	1	50 00	2,382·57	30·00		
Grand Totals	81	6,075 00	4,295,127·47	2,543 04 5,126·54 141·60	† 600,686 *	71,747

*Malt extract. †Vinegar.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

MANUFACTURES IN BOND.

for the Fiscal Year ended March 31, 1917.

Manufactured.		Paid Duty Ex-Manufactory.		Warehoused.		Total Duty Collected ex-Manufactory, including License Fees.
Vinegar.	Crude Fulminate.	Vinegar.	Duty.	Vinegar.	Crude Fulminate.	
Galls.	Lbs.	Galls.	$ cts.	Galls.	Lbs.	$ cts.
56,612·10	.....	56,612·10	2,264 55	.....	.....	2,314 55
.....	.....	.....	.....	.....	.....	50 00
156,198·80	.....	92,184·54	3,687 38	64,014·26	.....	4,087 38
85,841·94	.....	18,339·09	733 55	67,502·85	.....	833 55
79,774·57	.....	74,866·75	2,994 69	4,907·82	.....	3,044 69
.....	.....	.....	.....	.....	.....	600 00
.....	61,290	.....	.....	.....	61,290	300 00
.....	.....	.....	.....	.....	.....	50 00
1,223,925·98	.....	122,632·38	4,905 31	1,111,293·60	.....	5,980 31
212,277·15	.....	121,637·43	4,865 51	90,639·72	.....	5,415 51
1,824,630·54	61,290	486,272·29	19,450 99	1,338,358·25	61,290	22,675 99
185,495·41	.....	159,331·21	6,373 25	26,164·20	.....	7,773 25
144,327 08	.....	103,536 65	4,141 47	40,790 43	.....	4,291 47
.....	.....	.....	.....	.....	.....	300 00
.....	43,178·10	.....	.....	.....	43,178·10	300 00
329,822·49	43,178·10	262,867·86	10,514 72	66,954·63	43,178·10	12,664 72
40,726·65	.....	40,726·65	1,629 08	.....	.....	1,679 08
413,471·84	.....	319,676·55	12,787 06	93,795 29	.....	13,287 06
117,649·99	.....	94,684·73	6,503 79	22,965·26	.....	6,603 79
11,619·72	.....	11,619·72	464 79	.....	.....	514 79
2,737,921·23	104,468·10	1,215,847·80	51,350 43	1,522,073·43	104,468·10	57,425 43

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

No. 33.—Comparative Statement of Manufactures for

Provinces.	Licenses.		Materials Used.			
	No.	Fees.	Spirits.	Beer, Wines, etc.	Nitric Acid.	Mercury.
1916.		$ cts.	Galls.	Galls.	Lbs.	Lbs.
Ontario	43	3,025 00	747,284·86	144·00 * 2,647·84 255·91 †	402,342	43,397
Quebec	22	1,950 00	323,063·79	771·50	301,275	40,125
New Brunswick	2	100 00	11,611·73	164·61 † 50·10	.....	.....
Manitoba	9	450 00	51,200·23	925·71 † 26·90	.....	.....
Alberta	3	125 00	18,930·79	704·95 † 371·30	.....	.....
British Columbia	1	50 00	8,268·52	78·00	.....	.....
Totals	80	5,700 00	1,160,359·92	144·00 * 2,051·18 † 3,945·64	703,617	83,522
1917.						
Ontario	43	3,225 00	2,135,648·26	141·60 * 3,661·54 1,730·23 †	319,969	34,847
Quebec	24	2,150 00	2,052,898·76	852·50	280,717	36,900
New Brunswick	1	50 00	6,827·68	19·20	.....	.....
Manitoba	10	500 00	72,607·98	812·81 † 20·90	.....	.....
Alberta	2	100 00	24,762·22	542·40	.....	.....
British Columbia	1	50 00	2,382·57	30·00	.....	.....
Totals	81	6,075 00	4,295,127·47	141·60 * 2,543·04 † 5,126·54	600,686	71,747

*Malt extract. †Vinegar.

Inland Revenue Department,
Ottawa, July 2, 1917.

SESSIONAL PAPER No. 12

MANUFACTURES IN BOND—*Continued.*

the Fiscal Years ended March 31, 1916 and 1917.

Manufactured.		Paid Duty ex-Manufactory.		Warehoused.		Total Duty Collected Manufactory, including License Fees.
Vinegar.	Crude Fulminate.	Vinegar.	Duty.	Vinegar.	Crude Fulminate.	
Galls.	Lbs.	Galls.	$ cts.	Galls.	Lbs.	$ cts.
1,498,178·23	77,847	455,001·57	19,091 09	1,043,176·66	77,847	22,116 09
328,553·24	46,452	258,193·91	10,327 76	70,359·33	46,452	12,277 76
54,069·26	.....	54,069·26	2,162 78	.....	.....	2,262 78
317,096·39	.....	260,561·87	12,872 91	56,534·52	.....	15,322 91
84,473·92	.....	77,531·30	3,101 22	6,942·62	.....	3,226 22
42,036·58	.....	42,036·58	1,681 45	.....	.....	1,731 45
2,324,407·62	124,299	1,147,394·49	49,237 21	1,177,013·13	124,299	54,937 21
1,824,630·54	61,290	486,272·29	19,450 99	1,338,358·25	61,290	22,675 99
329,822·49	43,178·10	262,867·86	10,514 72	66,954·63	43,178·10	12,664 72
40,726·65	.....	40,726·65	1,629 08	.....	.....	1,679 08
413,471·84	.....	319,676·55	12,787 06	93,795·29	.....	13,287 06
117,649·99	.....	94,684·73	6,503 79	22,965·26	.....	6,603 79
11,619·72	.....	11,619·72	464 79	.....	.....	514 79
2,737,921·23	104,468·10	1,215,847·80	51,350 43	1,522,073·43	104,468·10	57,425 43

J. U. VINCENT,
Deputy Ministre.

APPENDIX A.—

DR. No. 34.—WAREHOUSE RETURN for the

Remaining in Warehouse from Last Year.	Warehoused.		Received from other Divisions	Totals.		Divisions.
			Vinegar.			
Vinegar.	Vinegar.	Crude Fulminate.	Removed during the year.	Vinegar.	Crude Fulminate	
Galls.	Galls.	Lbs.	Galls.	Galls.	Lbs.	
.....	.....	.....	7,595·46	7,595·46	.....	Brantford, Ont.
28,945·56	64,014·26	.....	305·74	93,265·56	.....	Hamilton, "
15,043·99	67,502·85	.....	.....	82,546·84	.....	Kingston, "
4,671·55	4,907·82	.....	.....	9,579·37	.....	Owen Sound, "
.....	.....	61,290	.....	.....	61,290	Prescott, "
110,671·07	1,111,293·60	.....	.....	1,221,964·67	.....	Toronto, "
84,010·84	90,639·72	.....	.....	174,650·56	.....	Windsor, "
243,343·01	1,338,358·25	61,290	7,901·20	1,589,602·46	61,290	Totals.
42,033·15	26,164·20	.....	.....	68,257·35	.....	Montreal, Que.
18,903·92	40,790·43	.....	.....	59,694·35	.....	Quebec, "
.....	.....	43,178·10	.....	.....	43,178·10	Sherbrooke, "
60,997·07	66,954·63	43,178·10	.....	127,951·70	43,178·10	Totals.
27,303·70	93,795·29	.....	7,645·74	128,744·73	.....	Winnipeg, Man.
6,442·62	22,965·26	.....	.....	29,407·88	.....	Calgary, Alta.
338,086·40	1,522,073·43	104,468·10	15,546·94	1,875,706·77	104,468·10	Grand Totals.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 12

MANUFACTURES IN BOND—*Continued.*

Fiscal Year ended March 31, 1917. CR.

Entered for Consumption.		Removed to other Divisions — Vinegar.	Exported.	Remaining in Warehouse	Totals.	
Vinegar.	Duty.	Warehoused in Divisions to which removed.	Crude Fulminate.	Vinegar.	Vinegar.	Crude Fulminate.
Galls.	$ cts.	Galls.	Galls.	Galls.	Galls.	Lbs.
7,595·46	303 82	.....	.....	.....	7,595 46	.....
70,321·01	2,812 84	3,556·99	.....	19,387 56	93,265·56	.....
70,856·08	2,834·22	.....	.....	11,690·76	82,546·84	.....
4,596·25	183 85	.....	.....	4,983·12	9,579·37	.....
.....	.....	.....	61,290	.....	.....	61,290
946,230·93	37,849 23	11,989·95	.....	263,743·79	1,221,964·67	.....
95,755·27	3,830 19	.....	.....	78,895·29	174,650·56	.....
1,195,355 00	47,814 15	15,546·94	61,290	378,700·52	1,589,602·46	61,290
52,860·87	2,114 44	.....	.....	15,396·48	68,257·35	.....
27,290·12	1,091 57	.....	.....	32,404·23	59,694·35	.....
.....	.....	.....	43,178·10	.....	.....	43,178·10
80,150·99	3,206 01	.....	43,178·10	47,800·71	127,951·70	43,178·10
34,949·44	1,397 98	.....	.....	93,795 29	128,744·73	.....
14,130·61	565 22	.....	.....	15,277·27	29,407·88	.....
1,324,586·04	52,983 36	15,546·94	104,468·10	535,573·79	1,875,706·77	104,468·10

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—

DR. No. 35.—COMPARATIVE STATEMENT of Warehouse Returns

Remaining in Warehouse from Last Year.	Warehoused.		Received from other Divisions.	Totals.		Provinces.
			Vinegar.			
Vinegar.	Vinegar.	Crude Fulminate.	Removed during the year.	Vinegar.	Crude Fulminate.	
Galls.	Galls.	Lbs.	Galls.	Galls.	Lbs.	1916.
289,898·08	1,043,176·66	77,847	10,757·63	1,343,832·37	77,847	Ontario
63,244·36	70,359·33	46·452	.....	133,603·69	46,452	Quebec
83,507·76	56,534·52	.....	7,495·17	147,537·45	.....	Manitoba
.....	6,942·62	.....	.....	6,942·62	.....	Alberta
436,650·20	1,177,013·13	124,299	18,252·80	1,631,916·13	124,299	.....Totals.....
						1917.
243,343·01	1,338,358·25	61,290	7,901·20	1,589,602·46	61,290	Ontario
60,997·07	66,954·63	43,178·10	.....	127,951·70	43,178·10	Quebec
27,303·70	93,795·29	.....	7,645·74	128,744·73	.....	Manitoba
6,442·62	22,965·26	.....	.....	29,407·88	.....	Alberta
338,086·40	1,522,073·43	104,468·10	15,546·94	1,875,706·77	104,468·10	.....Totals.....

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

MANUFACTURES IN BOND—*Concluded.*

for the Fiscal Years ended March 31, 1916 and 1917. CR.

Entered for Consumption.		Removed to other Divisions. Vinegar.	Vinegar.	Exported.	Remaining in Warehouse	Totals.	
Vinegar.	Duty.	Warehoused in Divisions to which removed.	Free.	Crude Fulminate.	Vinegar.	Vinegar.	Crude Fulminate.
Galls.	$ cts.	Galls.	Galls.	Lbs.	Galls.	Galls.	Lbs.
1,082,236·56	43,289·51	18,252·80	.....	77,847	243,343·01	1,343,832·37	77,847
72,606·62	2,904·29	.....	.....	46,452	60·997·07	133,603·69	46,452
116,530·89	4,661·23	.....	3,702·86	.....	27,303·70	147,537·45	.....
500·00	20·00	.....	.....	.....	6,442 62	6,942·62	.....
1,271,874·07	50,875·03	18,252·80	3,702·86	124,299	338,086·40	1,631,916·13	124,229
1,195,355·00	47,814 15	15,546·94	.....	61,290·00	378,700·52	1,589,602·46	61,290
80,150·99	3,206 01	.....	.....	43,178·10	47,800·71	127,951·70	43,178·10
34,949·44	1,397 98	.....	.....	.....	93,795·29	128,744·73	.....
14,130·61	565 22	.....	.....	.....	15,277·27	29,407·88	.....
1,324,586·04	52,983·36	1,546·94		104,468·10	535,573·79	1,875,706·77	104,468·10

	1916.	1917.
Total duty collected, ex-manufactory and ex-warehouse	$ 100,112 24	$ 104,333 79
License fees	5,700 00	6,075 00
Totals	$ 105,812 24	$ 110,408 79

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—ACETIC ACID.

No. 36.—Return of Manufactures for the Fiscal Year ended March 31, 1917.

Divisions.	Licenses.		Manufactured.	Paid Duty ex-Manufactory.		Warehoused.	Total Duty Collected ex-Manufactory, including License Fees.
	No.	Fees.	Acetic Acid.	Acetic Acid.	Duty.	Acetic Acid.	
		$	Galls.	Galls.	$ cts.	Galls.	$ cts.
Hamilton, Ont.	1	50 00	112,873·82			112,873·82	50 00
Montreal, Que.	1	50 00	243,485·33	198,734·89	7,949 39	44,750·44	7,999 39
Totals.	2	100 00	356,359·15	198,734·89	7,949 39	157,624·26	8,049 39

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—ACETIC ACID—*Continued.*

No. 37.—Comparative Statement of Manufactures for the Fiscal Years ended March 31, 1916 and 1917.

Provinces.	Licenses.		Manufactured.	Paid Duty ex-Manufactory.		Warehoused.	Total Duty Collected ex-Manufactory, including License Fees.
	No.	Fees.	Acetic Acid.	Acetic Acid.	Duty.	Acetic Acid.	
1916.		$ cts.	Galls.	Galls.	$ cts.	Galls.	$ cts.
Ontario.	1	50 00	306,267·42			306,267·42	50 00
Quebec.	1	50 00	203,753·12	203,753·12	8,150 14		8,200 14
Totals.	2	100 00	510,020·54	203,753·12	8,150 14	306,267·42	8,250 14
1917.							
Ontario.	1	50 00	112,873 82			112,873·82	50 00
Quebec.	1	50 00	243,485·33	198,734·89	7,949 39	44,750·44	7,999 39
Totals.	2	100 00	356,359·15	198,734·89	7,949 39	157,624·26	8,049 39

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister

APPENDIX A.—ACETIC ACID—*Continued.*

No. 38.—Warehouse Return for the Fiscal Year ended March 31, 1917.

Dr. Cr.

Warehoused.	Total.	Divisions.	Exported.	Total.
Acetic Acid.	Acetic Acid.		Acetic Acid.	Acetic Acid.
Galls.	Galls.		Galls.	Galls.
112,873·82	112,873·82	Hamilton, Ont.	112,873·82	112,873·82
44,750·44	44,750·44	Montreal, Que.	44,750·44	44,750·44
157,624·26	157,524·26	Totals.	157,624·26	157,624·26

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX A.—ACETIC ACID—*Concluded.*

No. 39.—Comparative Statement of Warehouse Returns for the Fiscal Years ended March 31, 1916 and 1917.

Dr Cr.

Warehoused.	Total.	Provinces.	Exported.	Total.
Acetic Acid.	Acetic Acid.		Acetic Acid.	Acetic Acid.
Galls.	Galls.	1916.	Galls.	Galls.
306,267·42	306,267·42	Ontario.	306,267·42	306,267·42
		1917.		
112,873·82	112,873·82	Ontario.	112,873·82	112,873·82
44,750·44	44,750·44	Quebec.	44,750·44	44,750·44
157,624·26	157,624·26	Totals.	157,624·26	157,624·26

	1916.	1917.
	$ cts.	$ cts.
Total duty collected on ex-manufactory	8,150 14	7,949 39
License fees	100 00	100 00
	8,250 14	8,047 39

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

(A)

METHYLATED SPIRITS.

No. 40.—STATEMENT showing the quantity of Raw Materials on hand on April 1, 1916, and March 31, 1917, and brought in during the year ended March 31, 1917.

DR. CR.

Names of Articles.	Stock on hand, April 1, 1916.	Brought in during the year.	Total to be Accounted for.	Used in Manufacture of Methylated Spirits.	Sold.	Stock on hand, March 31, 1917.	Total Accounted for.
	Pr'f galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.	Prf. galls.	Pr'f galls.
Alcohol	6,740·26	250,807·54	257,547·80	252,546·71	72·17	4,928·92	257,547·80
Wood Naphtha	2,038·36	45,942·19	47,980·55	46,528·70	.....	1,451·85	47,980·55
		Imp. Galls.	Imp. galls.				Imp. galls.
Gasoline	.....	793·3	790·3	.....	.....	.....	790·3

(B)

STATEMENT showing the quantity of Raw Materials used, and Methylated Spirits produced therefrom.

DR. CR.

Alcohol used. Statement (A) above.	Wood Naphtha used. Statement (A) above.	Gasoline used. Statement (A) above.	Total to be Accounted for.	Methylated Spirits produced.	Lost in Manufacture.		Total Accounted for.
Pr'f galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.	Pf'r galls.	p.c.	Pr'f galls.
.....	.....	.....	299,075·41	.....	.....	.....	.....
252,546·71	46,528·70	.....	.....	296,929·31	2,146·10	0·72	299,075·41

(C)

STATEMENT showing the quantity of Methylated Spirits on hand April 1, 1916, and March 31, 1917, quantity manufactured, sold and otherwise accounted for during the year ended March 31, 1917.

DR. CR.

Stock on hand, April 1, 1916.	Manufactured as per Statement (B) above.	Brought in during the year.	Total to be Accounted for.	Sold.	Re-used in manufacture.	Stock on hand, March 31, 1917.	Total Accounted for.
Pr'f galls.	Pr'f galls.	Prf' galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.	Pr'f galls.
1,449·44	296,929·31	.....	298,378·75	298,378·75	.....	.....	298,378·75

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.

EXPENDITURES, Etc.

APPENDIX B.

No. 1.—Details of Excise Expenditures for the Year ending March 31, 1917.

To whom paid.	Service.	Deductions for			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	Belleville.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
McFee, A. C.	Salary as Collector for the year	72 92	103 95*	1 20	711 39	
Cook, W. J.	" Deputy Collector for the year		99 68	60	254 18	
McArthur, G. H.	" 1st Class Exciseman for the year		94 92	4 32	1,800 72	
Brown, W. J.	" Special Class Exciseman for the year		103 68	72	1,495 56	
Wilson, H. R.	" " "		75 00	48	1,424 52	
Sprague, F. W.	" 1st Class Exciseman for the year		101 49	288	1,239 30	
Lally, J. E.	" 2nd Class Exciseman, from April 1st to June 30th and 1st Class from Jul 1st 1916 to March 31st 1917		99 27	2 88	1,044 03	
Treverton, C. B.	" 3rd Class Exciseman for the year		51 06	2 88	968 52	
Allen, B. K.	" 3rd Class Exciseman, from April 1st to Sept. 15, 1916. Dead		66 78	48	332 70	
Hardy, W. A. G.	" 3rd Class Exciseman, from April 1st to 30th June and 2ndf rom July 1st 1916 to March 31st, 1917		130 13	2 88	741 95	
Cole, W. I.	" 3rd Class Exciseman for the year		35 81	2 88	677 93	
Blaylock, E. G.	" 3rd Class Exciseman, from August 1st, 1916 to March 31st, 1917		25 81	1 44	489 37	
Rogers, H. A.	" 3rd Class Exciseman " " " "		25 81	1 44	489 37	
		76 92	1,013 39	25 08	11,669 54	
	Contingencies				3,530 94	15,200 48
	Brantford.					
O'Donohue, M. J.	Salary as Collector for the year	36 96		7 20	1,952 76	
Sloan, W.	" Deputy Collector for the Year		75 00	3 60	1,421 40	
Orr, H. N.	" Deputy Collector for the year	52 44		48	374 18	
Newsome, I.	" 1st Class Exciseman from April 1st to June 31st and promoted 1st class from July 1st 1916 to March 31st, 1917		65 26	2 88	1,238 03	
Schuler, F. C.	" 2nd Class Exciseman for the year		62 40	2 88	1,184 64	
Fairley, W.	" 2nd " "		42 05	2 88	796 69	
		92 40	244 71	19 92	6,967 70	
	Contingencies				1,041 33	8,009 03

Guelph.

Iler, B.	Salary as Collector for the year			7 20	2,792 76	
Till, T. M.	" Deputy Collector for the year	39 96		3,60	1,956 36	
Broadfoot, S.	" Accountant for the year	21 00		4,32	1,774 68	
Gerald, W. H.	" Special Class Exciseman for the year	43 92		4,32	2,151 72	
Bowman, A.	" 1st Class Exciseman for the year	30 00		2 88	1,467 12	
Egener, A.	" 1st " " Superannuated from January 1st, 1917			2 16	1,122 84	
Alteman, P. J.	" 1st " " for the year	52 44		2 88	1,444 68	
Coutts, J. J.	" 1st " " " "		75 00	2 88	1,422 12	
Martin, N.	" 1st " " " "		75 00	2 88	1,422 12	
Hanlon, J. R.	" 1st " " " "		74 19	2 88	1,407 90	
Thomas, F. W.	" 1st " " " "		74 19	2 88	1,407 90	
O'Brien, E. C.	" 2nd " " " "	24 96		2 88	1,222 08	
Uffelman, A.	" 3rd " " " "		55 89	2 88	1,059 90	
Howie, A.	" 3rd " " Superannuated from Sept. 1st, 1916			1 20	415 45	
Feik, L.	" 3rd " " for the year		43 73	2 88	828 36	
		212 28	398 00	48 72	21,895 99	
	Contingencies				1,134 26	23,030 25

Hamilton.

Baby, W. A. D.	Salary as Collector for the year		131 76	14 40	2,428 83	
O'Brien, Jas.	" Deputy Collector for the year		99 96	7 20	1,892 76	
Dumbrille, R. W.	" Accountant for the year	34 44		4,32	1,686 24	
O'Brien, J. F.	" " "	34 47		4,32	1,686 15	
Chelsedine, J. H.	" Special Class Exciseman for the year		145 20	4 32	1,450 44	
Hayhurst, T. H.	" 1st Class Exciseman for the year		75 00	2 88	1,422 12	
Boyd, J. F. S.	" 1st " " "	52 44		2 88	1,444 68	
Lawlor, J. J.	" 1st " " "		75 00	2 88	1,422 12	
Elliott, W. J.	" 1st " " "		104 76	2 88	1,392 36	
Kirkpatrick, H. J.	" 1st " " "		74 19	2 88	1,407 90	
Ballantine, Jr. A.	" Special Class Exciseman for the year		144 75	4 32	1,200 87	
Mitchell, J. L.	" 2nd Class Exciseman for the year		77 17	2 88	1,273 62	
Hiscott, J. O.	" 2nd " "		113 57	2 88	1,167 22	
Amor, W.	" 2nd " " "	24 96		2 88	1,222 08	
Griffin, P. F.	" 3rd " " "		55 59	2 88	1,053 99	
Henderson, H. G. D.	" 3rd " " " Died April 8th, 1916		8,96	24	81 63	
Beasley, M. C.	" 3rd " " "		49 92	2 88	947 16	
Smith, J. F.	" Deputy Collector Services dispensed with May 1st, 1916		8 32	48	78 93	
Blackman, C.	" Messenger for the year		39 96	2 88	757 08	
		146 31	1,194 11	71 28	24,016 18	
	Contingencies				635 83	24,652 01

Kingston.

Grimason, T.	Salary as Collector for the year	39 96		7 20	1,952 76	
Hanley, A.	" Deputy Collector for the year			3 60	1,496 40	

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Kingston—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Montgomery, W. H.	Salary as 2nd Class Exciseman from April 1st to June 30th and promoted to 1st Class July 1st, 1916 to March 31,st 1917	.....	65 26	2 88	1,238 03	
O'Donnell, J.	" Messenger for the year	19 92	.....	2 88	977 16	
Fahey, E.	" 3rd Class Exciseman, Died May 14th, 1916	.....	.....	48	166 18	
Hogan, J.	" 3rd Class Exciseman for the year	.....	49 92	2 88	947 16	
Frizell, W. J.	" 3rd " " "	.....	43 73	2 88	828 36	
		59 88	158 91	22 80	7,606 05	
	Contingencies	.....	.....	.....	80 17	7,686 22
	London.					
Davis, T. G.	Salary as Collector for the year	.....	.....	7 20	2,392 80	
Thrasher, W. A.	" Deputy Collector for the year	.....	177 48	3 60	1,818 84	
Webbe, C. E. A.	" 1st Class Exciseman for the year	33 48	.....	3 60	1,637 88	
Robinson, J. T.	" 2nd " " "	.....	70 42	4 32	1,243 97	
Foster, H.	" 1st " " "	34 96	.....	1 92	963 12	
Whitehead, J. P.	" Deputy Collector for the year	.....	55 81	2 88	1,059 90	
Pleasance, W.	" 2nd Class Exciseman. Died August 6th. 1916	.....	22 70	1 20	430 25	
Talbot, J.	" 3rd " " for the year	.....	49 92	2 88	947 16	
Farnworth, F. H.	" 3rd " " "	.....	47 46	2 88	899 64	
Pingel, H. H.	" 3rd " " from April 1st to June 30th and promoted to 2nd class from July 1st 1916 to March 31st, 1917	.....	42 46	2 88	804 64	
Granger, F. V.	" 3rd " " for the year	.....	41 18	48	783 30	
Dean, J. C.	" 3rd " " from April 1st to June 30th promoted to 2nd class from July 1st to March 31st, 1917	.....	42 46	2 88	804 64	
Lindsay, W. A. C.	" 3rd " " for the year	.....	37 90	2 88	717 54	
Thomas, W. R.	" 3rd " " confirmed as such from July 1st, 1916 to March 31st, 1917	.....	38 74	2 88	733 36	
Hicks, W. H.	" Deputy Collector for the year	27 96	.....	2 88	1,369 08	
Cousins, T.	" " "	.....	60 00	2 88	1,137 12	
Fiddes, J.	" " "	.....	42 05	2 88	796 69	
Luton, A. A.	" " "	.....	60 00	2 88	1,137 12	
Tytler, J. M.	" Stenographer & Typewriter for the year	.....	34 92	.....	665 04	
		96,40	823 58	54 00	20,342 09	
	Contingencies	.....	.....	.....	1,396 13	21,738 22

		Ottawa.					
McGuire, T.	Salary as	Deputy Collector for the year		75 00	3 60	1,421 40	
Forde, F. W.	"	3rd Class Exciseman for the year		60 00	2 88	1,137 12	
Bennett, J.	"	Deputy Collector for the year		64 92	2 88	1,232 16	
Laporte, G.	"	Deputy Collector for the year	24 00		2 88	1,173 12	
Noonan, J. M.	"	3rd Class Exciseman for the year		49 92	2 88	947 16	
Chisholm, J. A.	"	3rd " " "		49 92	2 88	947 16	
Ladouceur, F.	"	Deputy Collecr for the year		15 00	2 88	282 12	
Noël, L. E.	"	3rd Class Exciseman for the year		25 81	1 44	489 37	
O'Connor, M. J.	"	Deputy Collector Class A from Dec 26th to January 14th, 1917 and Collector from January 15th to March 31st, 1917		22 06	1 73	417 85	
			24 00	362 63	24 05	8,047 46	
		Contingencies				567 16	8,614 62
		Owen Sound.					
Graham, W. J.	Salary as	Collector for the year			3 60	1,796 40	
Johnson, J. J.	"	1st Class Exciseman for the year	30,00		2 88	1,467 12	
Chisholm, W. N.	"	Deputy Collector for the year	25 92		3 60	1,239 50	
Blyth, A.	"	1st Class Exciseman for the year		75 00	2 88	1,422 12	
Cryderman, C. W.	"	Deputy Collector for the year		45 00	2 88	852 12	
			55 92	120 00	15 84	6,777 26	
		Contingencies				509 56	7,286 82
		Perth.					
Stone, C. F.	Salary as	Collector for the year		190 23	7 20	1,627 56	
Noonan, H. T.	"	Deputy Collector for the year		109 18	1 20	804 12	
Snowden, J. W.	"	Special Class Exciseman transferred to Montreal from Oct. 1st, 1916		54 96	2 16	1,042 86	
Armstrong, T. E.	"	3rd Class Exciseman for the year		49 92	2 88	947 16	
Miller, R. M.	"	3rd " "		49 92	2 88	947 16	
Meighen, R. S.	"	3rd " "		43 73	2 88	828 36	
McMartin, A. G.	"	3rd " "		43 73	2 88	828 36	
McNaughton	"	3rd " "		64 92	2 88	1,232 16	
Clark, T.	"	Deputy Collector for the year		18 75	1 20	355 05	
Rowan, W. S.	"	" "		30 00	2 88	567 12	
Baikie, D.	"	" "		30 80	2 70	583 12	
George, J.	"	" "		24 96	2 88	472 08	
Maurice E.	"	" "		24 96	2 88	472 08	
Lane, T. M.	"	Special Class Exciseman transferred from Windsor from Oct. 1st, 1916 to March 31st, 1917	15 96		2 16	781 86	
McLenaghan, L. H.	"	3rd Class Exciseman from August 1st 1916 to March 31st, 1917		25 81	1 44	489 37	
			15 96	761 77	41 10	11,978 42	
		Contingencies				1,501 27	13,479 69

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid	Total amounts paid.
	Peterborough.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Buller, W. H.	Salary as Collector for the year		68 70	3 60	1,302 63	
Bickle, J. W.	" Deputy Collector for the year	18 96		2 88	928 08	
Parker, W. R.	" " "		42 05	3 60	795 97	
Grandy, R.	" 3rd Class Exciseman from August 1st 1916 to March 31st, 1917		6 64	1 68	124 96	
		18 96	117 39	11 76	3,151 64	
	Contingencies				141 15	
						3,292 79
	Port Arthur.					
Bridgeman, M. W.	Salary as Collector for the yaer		90 00	3 60	1,706 40	
Smith, B. H.	" 2nd Class Exciseman for the year		62 40	2 88	1,184 64	
Barnes, Geo.	" Deputy Collector Class B, transferred to Winnipeg Oct. 1st, 1916		16 20	1 44	307 32	
Wink, J. C.	" 3rd Class Exciseman for the year		49 92	2 88	947 16	
			218 52	10 80	4,145 52	
	Contingencies				819 82	
						4,965 34
	Prescott.					
Melville, T. R.	Salary as Collector for the year		135 00	7 20	2,557 80	
White, J. B.	" Deputy Collector for the yaer		305 16	3 60	1,691 16	
Murray, D.	" Special Class Exciseman for the year	37 92		4 32	1,857 72	
McPherson, E. A.	" 1st Class Exciseman for the year		307 14	4 32	1,238 52	
Granton, C.	" 3rd " " "		55 89	2 88	1,059 90	
McNally, E.	" 3rd " from April 1st to October 30th and promoted to special Class from Nov. 1st, 1916 to March 31st, 1917		143 35	3 48	1,036 44	
Byrnes, W. P.	" 3rd " " " for the year		49 92	2 88	947 16	
Wood, C. E.	" 3rd " " from April 1st to June 30th and promoted to 1st from July 1st, 1916 to March 31st, 1917		49 95	2 88	947 11	
Wood, J. A.	" Deputy Collector for the year			2 88	997 08	
Dunkin, W. H.	" " " "		42 05	3 60	795 97	
		37 92	1,088 46	38 04	13,128 86	
	Contingencies				660 74	
						13,789 60

		St. Catharines.				
Hesson, C. A.	Salary as	Collector for the year	31 92		3 60	1,564 44
Johnston H. J.	"	Deputy Collector for the year		54 96	2 88	1,042 08
Milliken, E.	"	2nd Class Exciseman for the year			2 88	1,247 04
Schram, R. L. H.	"	2nd " " "	43 68		2 88	1,203 36
Simpson, W. A.	"	1st " " "		75 00	2 88	1,422 12
			75 60	129 96	15 12	6,479 04
		Contingencies				331 61
						6,810 65
		Stratford.				
Rennie, G.	Salary as	Collector for the year			7 20	1,992 72
Tobin, T. S.	"	Deputy Collector for the year		279 94	3 60	1,216 46
Jeffrey, A. J.	"	Accountant transferred from Accountant to 1st Class January 1st to March, 31, 1917		179 75	3 96	1,135 00
Dalton, M. J.	"	Deputy Collector from April 1st, 1916 to February 1st, 1917		41 60	3 00	788 70
Billing, W.	"	" " for the year		9 96	3 60	186 36
Bamford, V. C. F.	"	" " "		49 92	3 60	946 44
		Contingencies		561 17	24 96	6,265 68
						302 93
						6,568 61
		Toronto.				
Frankland, H. R.	Salary as	Collector for the year		252 96	14 40	2,532 60
Mackenzie, J. H.	"	Special Class Exciseman for the year		99 96	3 60	1,896 36
Boomer, J. B.	"	Accountant for the year			4 32	1,795 68
Ritchie, Hugh	"	Deputy Collector for the year		75 00	7 20	1,417 80
Gerald, Chas.	"	Special Class Exciseman for the year			4 32	2,195 64
Jamieson, R. C.	"	" " " "	42 00		4 32	2,053 68
Graham, W. S.	"	" " " "	39 96	27 00	4 32	1,528 68
Doyle, B. J.	"	" " " "	31 92		4 32	1,563 72
Hurst, L. B	"	" " " "	31 92		4 32	1,563 72
Graham, A. L.	"	" " " "		89 24	4 32	1,506 40
Burns, R. J.	"	" " " "		79 92	4 32	1,515 72
Dunbar, G. E.	"	" " " "		73 68	4 32	1,396 92
Johnston, E. J. A.	"	" " " "		67 47	4 32	1,278 15
Coulter, Alex.	"	Accountant for the year	52 44		2 88	1,444 68
Helliwell, H. N.	"	1st Class Exciseman for the year	30 00		2 88	1,467 12
Falconer, R. H.	"	1st " " "		75 00	2 88	1,422 12
Gillies, A. L.	"	1st " " "		152 44	2 88	1,344 68
Young, R. E.	"	1st " " "		149 16	2 88	1,347 96
Walsh, W. H.	"	1st " " "		75 00	2 88	1,422 12
Spence, F. H.	"	1st " " "	30 00		2 88	1,467 12
Oliver, J. T.	"	1st " " "		117 09	2 88	1,223 70
Abbott, H. F.	"	1st " " "		73 96	2 88	1,191 83
Barber, J. S.	"	2nd " " "			2 88	1,247 04
Sykes, W. J.	"	2nd " " "		62 40	2 88	1,184 64

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Continued*..

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Toronto—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Young, J. J.	Salary as 2nd Class Exciseman from April 1st to June 30th, and promoted to 1st Class from July 1st 1916 to March 31st, 1917	.....	83 28	2 88	1,182 51	
Shorey, A. B.	" 2nd " " " for the year	.....	55 61	2 88	1,053 97	
Mackay, J. C.	" 2nd " " "	.....	91 62	2 88	942 96	
Jones, A.	" 3rd " " "	19 92	.....	2 88	977 16	
Eakins, G. G.	" 3rd " " "	.....	49 92	2 88	947 16	
Mather, A. P.	" 3rd " " "	.....	49 92	2 88	947 16	
Kinnear, W. J.	" 3rd " " "	.....	70 26	2 88	685 13	
Songhurst, J. R.	" 3rd " " "	.....	35 81	2 88	677 93	
Shanacy, M.	" Deputy Collector for the year	21 96	.....	2 88	1,075 08	
Elliott, I. H.	" " " "	.....	69 96	2 88	1,327 08	
Dager, H. J.	" " " "	.....	49 92	2 88	947 16	
Hall, W. H.	" " " Died Nov. 6, 1916	.....	40 00	1 92	758 08	
Feilding, L. G.	" Stenographer and Typewriter for the year	.....	34 92	.....	665 04	
Sloan, J. B.	" Messenger for the year	.....	39 96	2 88	757 08	
		300 12	2,141 46	136 56	49,951 58	
	Contingencies	.....	.....	.....	3,059 12	
						53,010 70
	Windsor.					
McSween, J.	Salary as Collector for the year	.....	.....	14 40	2,785 56	
Marion, H. R.	" Deputy Collector for the year	.....	99 96	7 20	1,892 76	
Beneteau, S.	" " " "	.....	83 64	7 20	1,584 12	
Belleperche, A. J.	" Accountant for the year	.....	90 00	4 32	1,705 68	
Bouteiller, G. A.	" Special Class Exciseman for the year	.....	.....	4 32	2,195 64	
Brennan, J.	" " " "	31 92	.....	4 32	1,563 72	
Lane, T. M.	" " " "	15 96	.....	2 16	781 86	
Thomas, R.	" 1st Class Exciseman transferred to Perth from October 1st, 1916	30 00	.....	2 88	1,467 12	
Bayard, G. A.	" 1st " " for the year	30 00	.....	2 88	1,467 12	
Berry, H. L.	" 1st " " "	.....	130 62	2 88	1,366 50	
Neil, J.	" 1st " " "	.....	75 00	2 88	1,422 12	
Lyons, E.	" 1st " " "	30 00	.....	2 88	1,467 12	
Love, G. G.	" 1st " " "	.....	67 17	2 88	1,273 62	
Monforton, E.	" 2nd " " fron April 1st to June 30th, and promoted to 1st class from July 1st to March 31st, 1917	.....	57 27	2 88	1,086 03	
O'Neil, J.	" 2nd " " for the year	.....	50 58	2 88	959 04	

Falconer, J.	"	3rd " " "			2 88	997 08	
Cahill, J. W.	"	3rd " " "		19 92	2 88	977 16	
Adams, A. K.	"	3rd " " "	from April 1st to June 30th, and promoted to 1st class from July 1st, 1916 to March 31st, 1917.	138 65	2 88	933 40	
Bergeron, R. J.	"	3rd " "	from April 1st to June 30th and promoted to 1st class from July 1st, 1916 to March 31st, 1917.	103 61	2 88	968 44	
Cummiford, F. D.	"	3rd " "	for the year	106 08	2 88	891 00	
Niven, T. D.	"	3rd " "	from April 1st to June 30th, and promoted to 1st class frm July 1st, 1916, to March 31st, 1917.	53 69	2 88	1,018 36	
Bezaire, T. M.	"	3rd " "	from April 1st to June 30th, and promoted to 1st class from July 1st, 1916, to March 31st, 1917.	53 69	2 88	1,018 36	
Fry, J.	"	3rd " "	for the year	48 69	2 88	923 40	
Dunlop, C.	"	Deputy Collector Superannuated from Oct. 1st, 1916			1 80	748 20	
Keogh, P.	"	" " "	for the year		3 60	1,196 40	
Leggatt, A. E.	"	Stenographer and Typewriter for the year		34 92		665 04	
Lamarsh, R. H.	"	3rd class Exciseman from August 1st, 1916 to March 31st, 1917		25 81	1 44	489 37	
		Contingencies		157 80	1,219 38	96 84	33,844 22
						817 28	34,661 50
		Joliette.					
Mainville, C. P.	Salary as	Collector for the year		44 43		5 40	2,175 12
Gamache, G. N.	"	Deputy Collector for the year			120 00	3 60	1,576 32
Normandin, J. G. H.	"	1st Class Exciseman for the year			167 88	4 32	1,577 76
Gariepy, L. N.	"	2nd " " "			62 40	2 88	1,184 64
Olivier, L. H.	"	3rd " " "			103 68	2 88	893 40
Olivier, J. A.	"	3rd " "	from April 1st to June 30th, and promoted to 1st class from July 1st, 1916, to March 31st, 1917.		52 46	2 88	994 60
Barrette, J. E.	"	3rd " "	for the year		46 23	2 88	875 88
Langevin, H. H.	"	3rd " " "			136 64	2 88	668 78
Parizeau, J.	"	3rd " " "			15 00	2 88	282 12
Richard, J. B. T.	"	Deputy Collector for the year			19 92	3 60	376 44
		Contingencies		44 43	724 21	34 20	1,0605 06
							1,372 65 11,977 71
		Montreal.					
Fox, J. D.	Salary as	Collector for the year		44 43		14 40	2,166 12
Hudon, M. L. E.	"	Deputy Collector for the year		69 96		1 20	1,928 76
Renaud, A. H.	"	" " " "		63 18		7 20	1,735 83
Longtin, H.	"	Accountant for the year			79 65	4 32	1,509 78
Forest, E. R.	"	" " "		32 50		7 20	1,585 30
Walsh, D. J.	"	Special Class Exciseman for the year		43 92		4 32	2,151 72
Kearney, D. J.	"	" " " "			79 92	4 32	1,515 72
Scullion, W. O.	"	1st Class Exciseman for the year		30 00		2 88	1,467 12
Desaulnier, J. E. A.	"	1st " " "			75 00	2 88	1,422 12
Bousquet, J. O.	"	Special Class Exciseman for the year			136 41	4 32	1,459 23
Harwood, J. O. H.	"	1st Class Exciseman for the year			117 48	2 88	1,379 64
McGuire, L. J.	"	1st " " "			75 00	2 88	1,422 12

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Montreal—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
David, T.	Salary as 1st Class Exciseman for the year		75 00	2 88	1,422 12	
Milot, J. E.	" 1st " " "		75 00	2 88	1,422 12	
Lamoureux, J. A.	" 1st " " "		67 17	2 88	1,273 62	
Lesperance, J. A.	" 1st " " "		49 99	2 64	947 31	
Dumouchel, L.	" 2nd " " "	24 96		2 88	1,222 08	
Andrews, A. A.	" 2nd " " "		43 68	2 88	1,203 36	
Laurier, J. L.	" 2nd " " "		145 92	2 88	1,101 12	
Brabant, J. B. G. N.	" 2nd " " Died February 17, 1917	22 88		2 64	1,120 24	
Comte, L. A.	" 2nd " " for the year		43 68	2 88	1,203 36	
Lambert, J. A.	" 3rd " " "		62 40	2 88	1,184 61	
Millier, E.	" 3rd " " "	19 92		2 88	977 16	
Panneton, G. E.	" 3rd " " "	19 92		2 88	977 16	
Costigan, J. J.	" 3rd " " "	19 92		2 88	977 16	
Belair, A. P.	" 3rd " " "	19 92		2 88	977 16	
Marin, S. H.	" 3rd " " "		49 92	2 88	947 16	
Crevier, J. H.	" 3rd " " "		49 92	2 88	947 16	
Thurbar, O. L.	" 3rd " " "		49 92	2 88	947 16	
Graveline, D. P.	" 3rd " " "		49 92	2 88	947 16	
Gervais, J. A.	" 3rd " " from April 1st to June 30th, promoted to 2nd class from July 1st 1916 to March 31st, 1917		86 45	2 88	978 13	
Robillard, G. A.	" 3rd " " for the year		49 92	2 88	947 16	
Mantha, J. A.	" 3rd " " "		49 92	2 88	947 16	
Boucher, A.	" 3rd " " "		49 92	2 88	947 16	
Joubert, P. E. C.	" 3rd " " "		49 92	2 88	947 16	
Prevost, J. O.	" 3rd " " from April 1st to June 30th, promoted to 1st class from July 1st, 1916 to March 31st, 1917		52 47	2 88	994 60	
Prevost, Jos.	" 3rd " " for the year		46 23	2 88	875 88	
Roux, G.	" 3rd " " from April 1st to June 30th, promoted to 1st class from July 1st, 1916 to March 31st, 1917		46 11	2 88	873 51	
Beaulieu, R.	" 3rd " " from April 1st to June 30th, promoted to 1st class from July 1st, 1916 to March 31st, 1917		109 83	2 88	809 79	
Beliveau, L. C.	" 3rd " " for the year		43 73	2 88	828 36	
Benoit, L. V.	" Deputy Collector for the year		158 52	3 60	1,837 80	
Chagnon, C. P.	" " " "		60 00	7 20	1,132 80	
Lefebvre, A.	" " " "		38 56	3 15	729 49	
Patterson, C. E. A.	" " " "		47 40	3 60	898 92	
St. Michel, F. X.	" " " "		24 96	3 60	471 36	

Bousquet, A.	"	Stenographer and Typewriter for the year		33 12		629 31	
O'Donnell, M. J.	"	Messenger for the year		39 96	2 88	757 08	
Snowden, J. W.	"	Special class Exciseman transferred from Perth, October 1st, 1916		54 96	2 16	1,042 86	
Aucoin, A. L.	"	3rd class Exciseman from August 1st, 1916 to August 31st, promoted to 2nd class from September 1st, 1916 to March 31st, 1917		28 74	1 44	544 80	
Brisette, O. E.	"	3rd Class Exciseman from August 1st to March 31st, 1917		25 81	1 44	489 37	
			498 87	2,335 15	168 03	57,223 41	
		Contingencies				5,073 59	62,297 00
		Quebec.	$ c.	$ c.	$ c.	$ c.	
Arcand, D.	Salary as	Collector for the year		139 92	7 20	2,652 84	
Timmons, R.	"	Deputy Collector for the year		92 13	5 40	1,746 18	
Lemoine, J.	"	" " " "	31 83		5 40	1,556 52	
Bergeron, E. L.	"	Accountant for the year		118 86	4 32	1,345 53	
Coleman, J. J.	"	1st Class Exciseman for the year	30 00		2 88	1,467 12	
Martineau, O. E. J.	"	1st " " "		103 41	2 88	1,237 38	
Poitras, W.	"	1st " " "		67 17	2 88	1,273 62	
Filteau, J. R.	"	2nd " " "		55 89	2 88	1,059 90	
Beaulieu, J. B.	"	3rd " " "	34 92		2 88	962 16	
Mercier, C. A.	"	Unclassified for the year		49 92	2 88	947 16	
Larue, A.	"	Deputy Collector for the year	50 76		3 60	1,395 60	
Rouleau, C. E.	"	1st Class Exciseman for the year		60 00	2 88	1,137 12	
Gelly, A.	"	Deputy Collector for the year		50 76	3 60	962 27	
Frenette, J. B. E.	"	" " "		52 43	4 32	993 21	
Hardy, Leon.	"	3rd Class Exciseman for the year		60 00	2 88	1,137 12	
Vézina, C.	"	3rd " " "		25 81	1 44	489 37	
			147 51	876 30	58 32	20,363 10	
		Contingencies				3,055 52	23,418 62
		Sherbrooke.					
Simpson, A. F.	Salary as	Collector for the year	45 96		7 20	2,246 76	
Chartier, E.	"	Deputy Collector for the year		84 96	3 60	1,611 36	
Quinn, I. D.	"	Special Class Exciseman for the year	31 92		4 32	1,563 72	
de Grosbois, C. B.	"	2nd Class Exciseman for the year		62 40	2 88	1,184 64	
Bowen, F. C.	"	3rd " " "		49 92	48	949 56	
Rousseau, E. H.	"	Deputy Collector for the year		54 96	3 60	1,041 36	
			77 88	252 24	22 08	8,597 40	
		Contingencies				880 33	9,477 73
		St. Hyacinthe.					
Cartier, A. P.	Salary as	Collector for the year		87 48	7 20	1,655 28	
Langelier, F.	"	Deputy Collector for the year		75 00	3 60	1,421 40	
Macdonald, A. B.	"	Special Class Exciseman for the year	43 92		4 32	2,151 72	
Rouleau, J. C.	"	1st Class Exciseman for the year		157 08	2 88	1,340 04	
Gauvin, E.	"	1st " " "		75 00	2 88	1,422 12	

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	St. Hyacinthe—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Archambault, F. X.	Salary as Deputy Collector for the year		45 00	2 88	852 12	
Francoeur, A.	" " " "		49 92	2 88	947 16	
De Billy, F. X.	" " " "		42 05	2 88	796 69	
		43 92	531 53	29 52	10,586 53	
	Contingencies				1,729 57	12,316 10
	Three Rivers.					
Duplessis, C. Z.	Salary as Collector for the year	31 92		3 60	1,564 44	
	Contingencies				635 53	2,199 97
	St. John.					
Belyea, T. H.	Salary as Collector for the year	39 96		7 20	1,952 76	
Law, A. L.	" Deputy Collector for the year		70 23	3 60	1,332 42	
Geldart, A. O.	" Special Class Exciseman for the year	31 92		4 32	1,563 72	
Fitzpatrick, W. J.	" 1st Class Exciseman for the year	30 00		2 88	1,467 12	
Ferguson, J. C.	" 1st " " "	30 00		2 88	1,467 12	
McGowan, J.	" 1st " " "		75 00	2 88	1,422 12	
Casey, F. J.	" 2nd " " from April 1st to July 31st, 1916 and promoted to 1st Class from August 1st, 1916 to March 31st, 1917, transferred to Charlottetown from Sept. 1st 1916		26 63	1 20	505 47	
Farmer, R. C.	" 2nd " " "		62 40	2 88	1,184 64	
Murphy, J. W.	" 3rd " " "		51 21	2 88	970 83	
Dwyer, D. L.	" Deputy Collector for the year		9 96	3 60	186 36	
Ward, C.	" Stenographer and Typewriter for the year		34 92		665 04	
Weeks, W. A.	" Deputy Collector Class B, transferred from Charlottetown Oct. 1st, 1916 to March 31st, 1917		27 48	2 88	519 60	
		131 88	357 83	37 20	13,237 20	
	Contingencies				274 37	13,511 57

		Halifax.				
James, T. C.	Salary as	Collector for the year	39 45		7 20	1,928 28	
King, R. W.	"	Deputy Collector for the year			3 60	1,696 32	
Waterfield, C. W.	"	Accountant for the year		56 82	4 32	1,076 28	
Blethen, C. W.	"	1st Class Exciseman for the year	30 00		2 88	1,467 12	
Hubley, H. H.	"	1st " " "	30 00		2 88	1,467 12	
Gorman, A. M.	"	1st " " "	30 00		2 88	1,467 12	
Tompkins, P.	"	Deputy Collector for the year			3 60	1,196 40	
Munro, H. D.	"	3rd Class Exciseman for the year	19 92		2 88	977 16	
Waddell, S. J.	"	Deputy Class for the year		22 44	3 60	423 96	
			149 37	79 26	33 84	11,699 76	
		Contingencies				412 99	12,112 75
		Pictou.					
Fraser, P.	Salary as	Collector for the year	27 96		3 60	1,368 36	
Carroll, F. P.	"	3rd Class Exciseman for the year		49 92	2 88	947 16	
Mackeen, E. T.	"	Deputy Collector for the year		45 00	2 88	852 12	
			27 96	94 92	9 36	3,167 64	
		Contingencies				611 03	3,778 67
		Charlottetown.					
Doyle, S. F.	Salary as	3rd Class Exciseman for the year		49 92	2 88	947 16	
Casey, F. J.	"	1st " " from April 1st to August 31st, and collector from September 1st, 1916 to March 31st, 1917		36 84	2 10	732 13	
				88 56	4 98	1,679 29	
		Contingencies				887 85	2,567 14
		Winnipeg.					
Gosnell, T. S.	Salary as	Collector for the year			7 20	2,792 76	
Verner, T. H.	"	Deputy Collector for the year	65 52	136 62	4 32	1,668 54	
Long, W. H. A.	"	Accountant for the year		90 00	4 32	1,705 68	
Larivière, A. C.		"	63 00		4 32	1,732 68	
Hammond, F. W.	"	1st Class Exciseman for the year		67 17	2 88	1,273 62	
Forsyth, D.	"	1st " " "		70 89	2 88	1,344 90	
Currie, W. W.	"	1st " " "		63 36	2 88	1,202 43	
Greig, W. G.	"	1st " " "		165 96	2 88	1,099 83	
Fegan, P. J.	"	2nd " " "		51 06	2 88	968 52	
Morris, T. H.	"	3rd " " "		49 92	2 88	947 16	
Nicholl, F. A.	"	3rd " " "		31 03	0 48	589 85	
Ivey, W. J.	"	3rd " " "		49 92	2 88	947 16	
Earl, R. W.	"	Deputy Collector for the year		75 00	2 88	1,422 12	
Sparling, J. W.	"	" " "		54 96	2 88	1,042 08	
Barrett, J. P.	"	" "		33 29	0 60	634 51	
McNiven, J. D.	"	" "		19 92	2 88	377 16	

APPENDIX B.—No. 1.—DETAILS of Excise Expenditures for the Year ending March 31, 1917—*Concluded.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Winnipeg—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Miller, J. C.	Salary as 3rd Class Exciseman from August 1st, 1916 to March 31st, 1917		34 56	1 44	655 62	
Barnes, G.	" Deputy Collector Class B from April 1st to December 1st, 1916		5 40	0 48	102 44	
		128 52	999 06	51 96	20,507 06	
	Contingencies				1,368 63	21,875 69
	Calgary.					
Fletcher, R. W.	Salary as Collector for the year		99 96	3 60	1,896 36	
Richardson, W.	" Deputy Collector for the year		65 04	2 88	1,232 04	
Wood, C. T.	" " " "		60 00	3 60	1,136 40	
Fidler, H.	" 3rd Class Exciseman for the year		111 36	2 88	885 72	
Markley, A. W. R.	" Deputy Collector for the year		49 92	3 60	946 44	
Barnard, A. H.	" " " "		5 00	0 96	94 04	
			391 28	17 52	6,191 00	
	Contingencies				2,758 44	8,949 44
	Moosejaw.					
Conklin, W. M.	Salary as Collector for the year		90 00	3 60	1,706 40	
Goudie, D. A.	" Deputy Collector for the year		51 24	3 60	970 08	
Campbell, T. N.	" " " from April 1st, 1916 to February 1st, 1917		33 30	2 40	630 90	
Scott, J. O.	" " " for the year		49 92	3 60	946 44	
Anderson, J. H.	" " " "		42 05	3 60	795 97	
Hall, L. H.	" 3rd Class Exciseman for the year		40 78	2 88	772 99	
Bell, W. H.	" 3rd " " from August 1st 1916 to March 31st, 1917		15 85	45	235 00	
			323 14	20 13	6,124 00	
	Contingencies				1,730 47	7,854 47
	Vancouver.					
Parkinson, E. B.	Salary as Collector from April 1st to June 1st, 1916. Died May 16th, 1916		21 66	1 20	410 46	
Thorburn, J.	" Deputy Collector for the year		144 57	5 40	1,618 74	
Decly, F.	" Accountant for the year		155 37	4 32	1,429 02	

Allen, G. A.	"	Speeial Class Exciseman from April 1st to Oct. 31st, 1916, and promoted to Collector from Nov. 1st, 1916 to March 31st, 1917	46 47		5 52	2,272 97	
Chilver, F. W.	"	1st Class Exeiseman for the year		93 72	2 88	1,403 40	
Simpson, G.	"	1st " " "		118 53	2 88	1,222 26	
Morgan, E. J.	"	1st " " "		113 27	4 32	1,232 35	
Macdonald, G.	"	1st " " "		108 00	2 88	1,157 79	
Sutherland, W. M.	"	1st " " from April 1st to June 1st, 1916, transferred to Victoria		18 72	0 48	189 12	
McSpadden, M.	"	3rd " " for the year		15 95	0 48	303 94	
Scanlan, T. J.	"	Deputy Collector for the year		64 92	3 60	1,231 44	
Wolfenden, W. M.	"	" " "		54 96	3 60	1,041 36	
Gray, R. S.	"	" " "		49 92	2 88	947 16	
Carson, K. C.	"	" " Died June 19th, 1916		15 00	0 60	284 40	
Grigor, R. W.	"	" " for the year		49 92	3 60	946 44	
McLachlan, P.	"	" " Died September 27th, 1916		19 98	1 44	378 54	
McCutcheon, H.	"	" " from April 1st, 1916 to February 1st, 1917		29 10	3 00	551 20	
Howell, Thos.	"	" " for the year		27 48	3 60	518 88	
Hambley, S. E.	"	" " "		12 48	3 60	233 88	
Gilpin, R. R.	"	" " "		12 48	1 80	235 68	
Campbell, A. E.	"	" " "		9 96	3 60	186 36	
			46 47	1,135 99	61 68	17,795 39	
		Contingencies				3,630 19	21,425 58
		Victoria.					
Jones, R.	Salary as	Collector for the year	39 96		7 20	1,952 76	
O'Sullivan, D	"	Deputy Collector for the year	52 44		3 60	1,443 96	
Ridgman, A. H.	"	1st Class Exciseman for the year	52 44		2 88	1,444 68	
Huggett, A. P.	"	1st " " "		120 00	0 48	1,129 44	
Shaw, J.	"	Deputy Collector for the year		32 40	3 60	613 92	
Clements, R. S.	"	3rd Class Exciseman for the year		77 79	0 48	568 59	
Schreiber, N. E.	"	2nd " " "		41 18	2 88	780 90	
Sutherland, W.M.	"	1st Class Exciseman; transferred from Vancouver June 1st, 1916 to March 31st, 1917		94 56	2 40	963 39	
			144 84	365 93	23 52	8,897 64	
		Contingencies				1,049 24	9,946 88
		Yukon.					
Stingle, Jos. W.	Salary as	Collector for the year		49 92	7 20	942 84	
		Contingencies				19 10	961 94

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for			Amounts paid	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	DISTRICT INSPECTORS.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
	Inspector of Distilleries.					
Brain, A. F.	Salary for the year	96 96			2,678 01	
	Contingencies				1,153 90	
						3,831 91
	Inspector of Tobacco Factories.					
Caven, W.	Salary from April 1 to June 30, and appointed Dominion Inspector Inland Revenue and Dominion Preventive Officer from July 1, 1916, to March 31, 1917	62 46			3,062 46	
	Contingencies				1,130 91	
						4,193 37
	Kingston.					
Gow, John E.	Salary as Inspector of Bonded Factories	57 96		9 00	2,832 96	
	Contingencies				613 46	
						3,446 42
	Toronto.					
Miller, W. F.	Salary for the year			9 00	2,915 94	
	Contingencies				411 37	
						3,327 31
	Windsor.					
Powell, J. B.	Salary for the year			9 00	2,991 00	
	Contingencies				718 14	
						3,709 14
	Montreal.					
Bernier, J. A.	Salary for the year		126 18	9 00	2,389 77	
	Contingencies				181 48	
						2,571 25
	Quebec.					
Dumontier, J. A.	Salary for the year		144 96	9 00	2,745 96	
	Contingencies				222 67	
						2,968 63
	N.B., N.S., and P.E.I.					
McDonald, John Jr.	Salary for the year		113 70	9 00	2,152 23	
	Contingencies				659 55	
						2,811 78
	Manitoba.					
Code, A.	Salary for the year	49 92		9 00	2,441 04	
	Contingencies				900 73	
						3,341 77

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	DISTRICT INSPECTORS.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
	Calgary.					
Saucier, X	Salary for the year	55 44	.....	9 00	2,710 53	
	Contingencies	.....	.....	.....	1,519 45	
						4,229 98
	British Columbia.					
Miller, J. E	Salary for the year	60 00	.....	9 00	2,931 00	
	Contingencies	.....	.....	.....	1,627 37	
						4,558 37
	Dom. Dist. Malt Houses (Breweries).					
Barrett, J. K	Salary for the year	.....	.....	.....	3,199 92	
	Contingencies	.....	.....	.....	1,553 67	
						4,753 59
	Bonded Factories.					
J. E. Gow	Contingencies	.....	.....	.....	413 40	
		3,226 78	15,470 35	1,321 01		
	Annuities	.....	140 40			
	Insurance	.....	3,932 85			

RECAPITULATION.

Excise salaries	$ 468,499 81
Contingencies	53,124 90
Total	$ 521,624 71

See Financial Statement No. 4.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	General Excise Contingencies.	$ cts.	$ cts.
British American Bank Note Co.	To pay for bottling labels supplied	5,945 50	
Hughes, P. A.	" petty cash charges	56 77	
Charlotte Scales	" vaults and store room cleaning	313 00	
Baird, A. Tallock Ltd	" iron locks and brass labels	10 18	
Oertlings, L.	" " "	14 12	
Pritchard & Andrews Co., Ltd.	" tobacco rollers, stamps and daters	341 15	
Bank of Montreal	" draft, favor of Baird & Tallock, Ltd	42 73	
Bank of Montreal	" " L. Oertling	85 46	
Lyman Ltd	" for pipettes	8 89	
Thornton & Truman	" repairs to locks, etc	66 50	
Registrar Exchequer Court	" writ of assistance	11 60	
Powell, J. B., Windsor	" travelling expenses	205 25	
Webbe, C. E. A., London	" "	4 80	
Robinson, J. T., London	" "	4 80	
Johnson, J. J., Owen Sound	" "	9 72	
Walsh, Wm. H., Toronto	" "	2 00	
Dominion Warehousing Co	" Canadian Express charges	3 08	
Therien, O., Ville-Marie	" professional service	20 00	
Landry & Landry, Edmonton	" "	61 72	
Burroughs Adding Machine Co.	" adding machine	776 16	
	Excise Examinations.		
Gow, John E.	To pay expenses re promotion examinations	203 89	
Caven, W.	" " " "	57 40	
Bernier, J. A.	" " " "	134 70	
Brain, A. F.	" " " "	172 74	
			8,553 16
	Law Costs.		
Armstrong, A. H.	To pay Law costs Rex vs. F. Galla	20 00	
	" " D. Rubin	20 00	
Fauteux & Fauteux	" " Bartallacci	14 00	
	" " Leclair	14 00	
	" " L. Charbonneau	14 80	
	" " D. Cardinal	14 00	
	" " P. Geoffrion	14 00	
	" " Dubois, E.	14 00	
	" " J. McDonald	14 00	
	" " J. Duranceau	14 00	
	" " J. Burns	14 00	
	" " N. Lachapelle	24 00	
Grant, T. H.	" " E. A. Fraser	10 00	
	" " C. E. Bell	10 00	
Gagnon, Os.	" " A. Boissonnault	20 00	
	" " Meunier	20 00	
	" " F. Lallemant	20 00	
	" " J. Gibouleau	64 90	
	" " F. Miller	40 60	
	" " J. H. Boyer	27 00	
	" " O. Boyer	24 00	
	" " J. N. Boyer	20 00	
	" " M. Ladasky	14 00	
	" " B. Lipson	43 80	
	" " D. Jodoin	68 50	
	" " Tourangeau	20 85	
	" " N. Beeson	45 00	
	" " J. T. Derome	10 00	
	" " O. Boyer	12 50	
	" " S. Currie	12 50	

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
		$ cts.	$ cts.
	To pay Law costs Rex *vs.* J. Gauthier	12 50	
	" " D. Languedoc	12 50	
	" " P. Giguere	45 00	
	" " J. T. Derome	29 00	
	" " J. B. Baillargeon	29 00	
Baird, W. J	" " How	20 00	
	" " F. Fernandez	10 00	
	" " A. H. Joe	21 00	
	" " Hin Kee	19 00	
	" " Lee Sing	19 20	
	" " Young Gee	10 00	
Cavan, J. E	" " S. Dunham	33 60	
Champagne, N	" " J. Grant	20 00	
	" " E. D. Pelletier	64 00	
Cowan, J. E	" " Mullin & Knapp	15 00	
Lussier, Flynn & Gendron	" " Patenaude	10 00	
Bérubé, L	" " W. Rirouca	17 76	
O'Bready & Panneton	" " H. Renaud	24 80	
Moraud, L	" " R. Emond	24 50	
	" " J. Allard	24 50	
	" " J. A. Vezina	20 51	
	" " J. P. Vezina	10 00	
	" " "	20 00	
	" " W. F. A. Robitaille	19 50	
	" " A. Dore	20 00	
Leblanc, A	" " H. Raymond	53 00	
Desilets, Frs	" " Theo Duff	56 90	
Lawson, W	" " J. Hazelton & B. Harrington.	20 00	
Laliberte	" " A. Leblanc	28 30	
	" " Jos. Masse	28 60	
Beaubien, A. J. C	" " *re* illicit still, S. Caron	7 10	
Desilets, A	" " M. Lefebvre	77 85	
Jackson, J. A	" " G. A. Hudon	4 00	
Aikman, J A	" " A. L. McDermott	38 00	
Hanson, E B	" " H. Cady & H. B. Spragg.	67 46	
Brabant, G. N	" " Heroux	2 00	
	" " H. Major	1 00	
Loranger, L. J	" " A. Depatie	14 00	
Duchemin, A. P	" " P. Cameron	49 20	
Cousineau & Dauphinais	" legal expenses Rex *vs* O. Lalancette	7 50	
Lefebvre, F	" law costs, Rex *vs* O. Lalancette	8 00	
Gurd & Spuril	" " A. L. McDernot	46 50	
Cousineau, L	" " J. B. Gauvreau	10 00	
	" " G. Patterson	10 00	
Piette, J. A	" " F. X. Lamarche	154 10	
Graydon & Graydon	" " H. H. Pringle	5 00	
Emard, C	" " I. Gougeon	60 00	
			1,964 33
			10,517 49
American Bank Note Co	To pay for stamps and labels supplied		82,889 50
	Total		$ 93,406 99

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 1.—Details of Excise Provisional Allowance for the Year ended March 31, 1917.

To whom paid.	Service.	Amounts paid.	Total. amounts paid.
	Excise Provisional Allowance.	$ cts.	$ cts.
Gosnell, T. S. Winnipeg.	To pay Code, A.	99 96	
	" Verner, T. H.	99 96	
	" Long, W. H. A.	99 96	
	" Lariviere, A. C.	99 96	
	" Hammond, T. W.	124 92	
	" Forsyth, D.	124 92	
	" Sparling, J. W.	124 92	
	" Greig, W. G.	124 92	
	" Morris, L. H.	124 92	
	" Nicholl, F. A.	124 92	
	" Fegan, P. J.	124 92	
	" Ivey, W. J.	124 92	
	" Earl, R. W.	124 92	
	" Currie, W. W.	124 92	
	" Barrett, J. P.	124 92	
	" McNiven, J. D.	49 92	
	" Ashton, H.	150 00	
	" Davis, T. J.	150 00	
	" Belanger, A.	150 00	
	" Miller, J. C.	139 55	
	" Johcson, J. D.	150 00	
	" Cosgrove, J. B.	150 00	
	" MacGillvray, E. F.	51 66	
			2,765 09
Fletcher, R. W. Calgary.	" Gray W. B.	50 00	
	" Barnard, A. H.	25 00	
	" Fletcher, R. W.	100 00	
	" Markley, A. W. R.	125 00	
	" Wood, C. T.	125 00	
	" Richardson, W.	125 00	
	" Davis, W. E.	150 00	
	" Dalgetty, Jas.	150 00	
	" Joughin, W. J. C.	150 00	
	" Pierce, A. H.	87 50	
	" Richards, D. H.	150 00	
	" Fidler, E.	150 00	
	" Farrell, W. G.	37 50	
	" McKibbon, W. S.	87 50	
	" Prince, A.	75 00	
	" Fidler, H.	150 00	
	" Green, W.	71 77	
	" Venn, C. J.	26 21	
			1,835 48
Conklin, W. M. Moose-jaw.	" Hall, L. H.	150 00	
	" Bell, W. H.	150 00	
	" Anderson, J. H.	150 00	
	" Campbell, T. N.	125 00	
	" Goudie, D. A.	125 00	
	" Scott, J. O.	125 00	
	" Wylie, M.	57 08	
	" Conklin, W. M.	99 99	
			982 07
Allen, G. A. Vancouver.	" McLachlan, P.	75 00	
	" Glenday, D.	37 50	
	" McSpadden, M.	150 00	
	" Quinn, T.	150 00	
	" Gibson, J. N.	150 00	
	" Grantham, J. A.	150 00	
	" Brown, R. H.	150 00	
	" Carmichael, D.	124 92	
	" Morgan, E. J.	124 92	
	" MacDonald, G.	124 92	
	" Simpson, G.	124 92	
	" Sutherland, W.	20 82	
	" Gray, R. S.	124 92	

SESSIONAL PAPER No. 12

APPENDIX B.—No. 1.—Details of Excise Provisional Allowance for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Excise Provisional Allowance—Con.	$ cts.	$ cts
Allen, G. A.	" Wolfenden, Wm.	124 92	
Vancouver—*Con.*	" Scanlan, T.	124 92	
	" Corsan, R. C.	31 23	
	" Thorburn, Jas.	99 96	
	" Allen, G. A.	99 96	
	" Chilver, F. W.	99 96	
	" Deeley, F.	99 96	
	" Grigor, R. W.	75 00	
	" Howell, T.	75 00	
	" Atkins, B. R.	75 00	
	" Leishman, A.	50 04	
	" Delahay, Wm.	50 04	
	" Hambley, S. E.	50 04	
			2,563 95
Jones, R.	" Clements, R. S.	150 00	
Victoria.	" Robinson, W.	150 00	
	" Johnson, Geo.	150 00	
	" Huggett, A. P.	125 00	
	" Shaw, J.	125 00	
	" Ridgman, A. H.	100 00	
	" O'Sullivan, D.	100 00	
	" Jones, R.	100 00	
	" Schreiber, C. B.	150 00	
	" Mara, J. L.	29 93	
	" Sutherland, W.	104 20	
	" Mason, Thos.	96 13	
			1,380 26
	Total provisional allowances		9,526 85

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Place of Residence.	Service.	Amounts paid.	Total Amounts paid.
		Commissions to Customs Officers.	$ cts.	$ cts.
Grubb, W. B.	Taber	From Dec. 21, 1915, to March 31, 1916	9 24	
Polley, W. H.	Trenton	" April 1, 1915 " 1916	246 40	
McPherson, J.	North-Sydney	" " " "	346 40	
Polley, W. H.	Trenton	" April 1, 1916, to March 31, 1917	131 56	
Porter, N.	Simcoe	" " " "	346 40	
Thomson, J. M.	Napanee	" " " "	16 05	
Clarke, Thos.	Pembroke	" Dec. 1, 1916, "	98 83	
Hastey, J. W.	Fort Francis	" April 1, 1916, "	52 78	
Jackson, H. B.	Rainy River	" " " "	246 40	
Kavanagh, A. J.	Gaspe	" " " "	98 79	
Dayton, G. F.	Edmundston	" " " "	102 35	
Ratchford, C. E.	Amherst	" " " "	9 33	
McPherson, J.	North Sydney	" " " "	446 40	
Ball, J. A.	Dauphin	" " " "	148 20	
Campbell, T. N.	Prince Albert	" Feb. 1, 1916, to March 31, 1917	6 30	
Roche, W. G. P.	Maple Creek	" Dec. 12, 1916, "	248 80	
Sanborn, J. B.	Vermilion	" April 1, 1916, "	43 18	
McLeod, J. H.	Prince Rupert	" Sept. 27, 1916, "	150 00	
Marshall, Wm. C.	Cranbrook	" Nov. 17, 1916, "	348 66	
The Employers Liabilities Ass. Corp., Ltd.	Montreal	" April 1, 1916, "	16 04	
Railway Passengers' Ass. Co.	Toronto	" " " "	8 40	
Dom. of Can. Guar. & Acc. Ins. Corp.	"	" " " "	10 80	
The London Guar. & Acc. Corp. Ltd.	"	" " " "	10 80	
Imperial Guar. & Acc Ins. Co. of Canada	"	" " " "	3 60	
		Total		$ 3,145 71

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Duty-pay.	$ cts.	$ cts.
Abbott, H. F.	From April 1, 1916 to March 31, 1917	150 00	
Adam, A. R.	" " "	150 00	
Allen, G. A.	" April 1 to Sept. 30, 1916 and Oct. 1 to Oct. 31, 1916.	175 00	
Amor, Wm.	" April 1, 1916 to March 31, 1917	100 00	
Barrette, J. E.	" Nov. 1, 1916 to Jan. 23, 1917	16 73	
Bayard, G. A.	" April 1, 1916 to March 31, 1917	150 00	
Bergeron, R. J.	" " "	150 00	
Berry, H. L.	" " "	200 00	
Bousquet, J. O.	" " "	225 00	
Bouteiller, Geo.	" " "	300 00	
Blyth, A.	" May 8 to Aug. 20, and Sept. 11 to 22, 1916	47 74	
Boyd, J. F. S.	" April 1, 1916 to March 31, 1917	200 00	
Brennan, J.	" " "	150 00	
Byrne, W. P.	" " "	150 00	
Cahill, J. W.	" " "	150 00	
Chaput, N. J.	" " "	150 00	
Champagne, A.	" April 1 to Sept. 30, 1916, and Oct. 1 to Nov. 15, 1916	93 75	
Champagne, O.	" April 1, 1916 to March 31, 1917	120 83	
Cheseldine, J. H.	" " "	200 00	
Chilver, F. W.	" " "	210 42	
Chilvers, W.	" Dec. 23, 1916 to March 31, 1917	27 42	
Cole, W. I.	" April 1, 1916 to March 31, 1917	148 33	
Coleman, J. J.	" " "	300 00	
Corriveau, O.	" " "	100 00	
Cummiford, F. D.	" " "	150 00	
Dalgetty, J.	" " "	100 00	
Davis, T. J.	" " to May 25, 1916	15 05	
Denis, J. L.	" " to March 31, 1917	150 00	
Doyle, B. J.	" " "	150 00	
Eakins, G. G.	" " "	150 00	
Egener, A.	" " to Sept. 30, 1916	50 00	
Elliott, W. J.	" " to March 31, 1917	150 00	
Fairley, Wm.	" " "	100 00	
Falconer, J. E.	" " "	150 00	
Feik, L.	" " "	150 00	
Gariepy, L. N.	" " "	150 00	
Gauthier, W.	" Aug. 7 to Aug. 27, 1916	5 64	
Gauvin, L. E.	" Dec. 18, 1916 to Feb. 20, 1917, and 4 days	56 31	
Gauvin, S. E.	" April 1, 1916 to March 31, 1917	161 75	
Gerald, W. H.	" " "	300 00	
Gerald, Chas.	" " "	300 00	
Gray, R. S.	" " "	150 00	
Granton, Chas.	" " "	150 00	
Halley, W. J.	" " "	150 00	
Hardy, W. A. G.	" " "	150 00	
Harwood, J. O. A.	" Sept. 1 to Sept. 30, 1916, and 2 mos. to 30-11-16	50 00	
Helliwell, H. N.	" April 1, 1916 to March 31, 1917	150 00	
Hughes, M.	" " "	162 50	
Hurst, L. B.	" " "	200 00	
Jamieson, R. C.	" " "	300 00	
Jones, A.	" " "	150 00	
Keogh, P. M.	" " "	150 00	
Lally, J. E.	" " "	150 00	
Lane, T. M.	" " "	212 50	
Lamoureux, J. A.	" April 1 to Aug. 31, 1916, and 4 mos. 31-3-17	150 00	
Langevin, H. H.	" April 1, 1916 to March 31, 1917	150 00	
Lapointe, Z.	" " to Sept. 30, 1916	50 00	
Lefebvre, S.	" Dec. 14, 1916 to 31-3-17	29 84	
Lyons, E.	" April 1, 1916 to March 31, 1917	162 50	
McArthur, G. H.	" " "	300 00	
McLenaghan, F. H.	" " "	150 00	
McMartin, A. G.	" " "	150 00	
McNally, E.	" " "	150 00	
McPherson, E. A.	" April 1 to June 30, and Aug. 1 to Sept. 30, 1916	183 33	
	and 1st to 31st of July	16 67	

APPENDIX B.—No. 1.—Details of Excise Expenditures for the Year ended March 31, 1917—*Concluded.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Duty-pay—Concluded.	$ cts.	$ cts.
Macdonald, A. B.	From April 1 to March 31, 1917	250 00	
Marin, L. H.	" April 1 to Aug. 6, and Aug. 28 to Sept. 30, 1916	94 36	
Martin, N.	" April 1 to March 31, 1917	200 00	
Millier, E.	" " "	187 50	
Milot, J. F.	" April 1 to June 30, and Aug. 1 to Sept. 30, 1916, and 1st to July 31st, 1916, and Dec. 14 to Feb. 20,1917	138 25	
Monforton, E. R.	" April 1 to March 31, 1917	100 00	
Morris, T. H.	" " "	100 00	
Murray, D.	" " "	300 00	
Niven, T. D.	" " "	150 00	
Normandin, G. H.	" " "	300 00	
O'Brien, J. F.	" " "	250 00	
Oliver, J. T.	" " "	87 50	
Olivier, J. A.	" " "	200 00	
Olivier, H.	" " "	150 00	
O'Neil, G.	" " "	150 00	
Parent, D. J.	" Jan 24 to 31-3-17	18 82	
Poitras, W.	" April 1 to March 31, 1917	100 00	
Provost, J. O.	" Oct. 1 to March 31, 1917	75 00	
Quinn, J. D.	" April 1 to March 31, 1917	237 50	
Rousseau, E. H.	" " "	112 50	
Shorey, A. B.	" " "	150 00	
Sprague, F. W.	" " "	170 83	
Snowdon, J. W.	" April 1 to Sept. 30, 1916, and Oct. 1 to Dec. 17, 1916, and Feb. 21 to March 31, 1917	245 85	
Sutherland, W.	" April 1 to 30, 1916	12 50	
Thomas, R.	" April 1, 1916 to March 31, 1917	150 00	
Thomas, F. W.	" " "	150 00	
Thurber, Geo.	" April 1 to May 24, and May 25 to June 26, 1916	28 43	
Treverton, C. B.	" April 1, 1916 to March 31, 1917	150 00	
Uffelmann, A.	" " "	150 00	
Walsh, D. J.	" April 1, 1916 to Sept. 30, 1917	150 00	
Walsh, W. H.	" " to March 31, 1917	150 00	
Wood, C. E.	" " "	150 00	
Young, J. J.	" " "	150 00	
Total			14,580 35

Appendix B.—No. 1.—Details of General War Tax Expenditures for the year ended March 31, 1917.

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	General War Tax Contingencies.	$ cts.	$ cts.
American Bank Note Co	Stamps supplied	7,828 00	
The Plaunt Hardware Co	Hardware supplied	14 10	
Desrivieres, J. A	Cartage	28 00	
Brown, Miss J	Salary as stenographer	57 60	
Leclerc, Miss E	" "	45 54	
Rousseau, Miss M	" "	56 26	
			8,029 50
	Law Costs.		
Gagnon, O	Rex *vs.* J. E. H. Quippe	20 00	
	" Richard, Loranger & St. Cyr	68 55	
	" A. Shneer	20 00	
	" A. Cofsky	20 00	
	" R. Brender	20 00	
	" L. A. Roy	20 00	
	" M. Illman	28 90	
	" L. Millette	23 90	
	" J. J. Leduc	14 00	
	" E. Ethier	20 00	
	" Pharmacie Outremont	10 00	
	" A. Tourangeau	14 00	
	" E. Ethier	83 50	
	" W. Paquin	10 00	
	" A. Dugal	10 60	
	" A. P. Fortier	14 00	
Moraud, L	" Mrs. M. Boyce & Son	20 00	
	" A. A. Cantin	20 00	
	" Syndicate of Quebec	20 00	
	" F. C. De Lachevrotiere	20 00	
	" A. Théberge	20 00	
	" N. Abouissify	45 94	
	" I. Begin	23 75	
	" A. Marchessault	23 75	
	" A. Aubin	50 94	
	" P. Langlois	50 94	
	" L. Roy	51 44	
	" D. E. Landry	51 84	
	" J. Gagnon	24 50	
	" P. Turgeon	24 50	
	" A. E. Francoeur	24 50	
	" J. A. Lapointe & Co	24 50	
	" J. Paquet	24 50	
	" Lepine Frere	24 50	
	" E. A. Delisle	24 50	
	" Emond	24 50	
	" J. Allard	24 50	
	" J. P. Vezina	10 00	
Bernier, H	" W. B. Rogers	20 00	
	" W. Brunet	44 50	
	" E. Dubé	44 50	
	" La Cie Paquet, Ltd	52 20	
	" Fraserville Drug Store	30 05	
	" J. Viel	30 05	
	" M. Gas Co	30 05	
	" A. E. Thivierge	30 05	
	" Irene Lord	7 30	
	" Myrand & Pouliot	24 50	
	" V. Giroux	49 00	
	" Mrs. Laroche & Co	24 50	
Baird, W. J	" Tai Sing Co	48 50	
	" Vancouver Drug Co	10 00	
	" J. M. White	15 00	
	" R. E. Forest	25 40	
Landry & Landry	" McDonald Hotel	25 00	
Robertson, Wm. C	" Mrs. Saucier & Fletcher	25 00	

APPENDIX B.—No. 1.—Details of General War Tax Expenditures for the year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts. paid.	Total amounts paid.
	Law Costs—Con.	$ cts.	$ cts.
Fauteux & Fauteux	Rex *vs.* Ladies Surprise Store	10 00	
	" Neven & Fils, Ltd	10 00	
	" E. Bourdon	10 00	
Williams, W. H.	" R. G. Cooke	20 00	
Shurtleff, W. L.	" J. Audet	10 00	
	" E. Ferris	10 00	
	" A. Barter	10 00	
Mahaffy, Geo.	" Wadell, Boyd & Son	20 30	
	" A. R. Farr	20 98	
	" W. B. Straham	40 98	
Smith, H. D.	" T. J. Hill Co.	10 00	
	" W. D. McKellar	10 00	
	" J. H. McKin	10 00	
	" Johnson & Co.	20 00	
	" C. Sield	20 00	
	" Tinsley & Co.	20 00	
	" J. Courney	20 00	
Ross, Wm. L.	" R. C. Porter	10 00	
Desroches, F.	" H. Lazarovitch	20 00	
Campbell, A. F.	" G. W. Pollock	10 00	
McHugh, G.	" Parke, Davis Co.	16 05	
	" Chas. Hawkins	40 00	
	" G. Hallet	20 00	
	" G. H. Marie	20 00	
Panneton, D.	" J. A. Beaudoin	10 00	
	" H. H. Cooper	10 00	
	" J. A. Planche	10 00	
	" G. E. Denault	10 00	
	" J. H. Vallandre & Cie	10 00	
	" H. Whitcomb	10 00	
	" Dominion Lime Co.	10 00	
	" H. H. Hunt	10 00	
	" J. Black	10 00	
	" E. St. Onge	10 00	
	" A. S. Kendall	32 60	
	" A. Couture	31 85	
	" A. Provencher	10 00	
	" J. E. Michel	10 00	
	" Jas. Roy	10 00	
	" A. Cote	10 00	
	" J. Pouliot	10 00	
	" M. Bouret	10 00	
	" J. D. Lafond	10 00	
	" J. B. Lebond	10 00	
	" A. W. Gibson	14 15	
	" J. E. Hebert	20 00	
	" L. David	20 00	
McPherson, G. G.	" J. Mear	20 00	
	" A. C. Scarth	20 00	
	" J. Brenner	20 60	
Lefebvre, F.	" H. Ruthemberg	8 00	
	" Jno. Zakaib	8 00	
	" E. Chevalier	11 00	
Armstrong, A. H.	" W. Cornell	20 00	
Smith, A. L.	" Benneth & Messcar	10 00	
Benneth, A. W.	" R. W. Dunkan	20 00	
Blewett, T. R.	" J. Dykes	10 00	
Willoughly, Craig & Co.	" Dr. G. Longault	20 00	
	" Limerick Supply	25 15	
	" Surdia & George	15 15	
	" J. D. McMillan	15 15	
	" Dr. G. Longault	25 00	
Bowlby, D. S.	" L. Bardon	12 00	
Turnbull & McCausland	" Backhaltar Bros.	87 80	
	" W. H. Inkster	24 65	

APPENDIX B.—No. 1.—Details of General War Tax Expenditures for the year ended March 31, 1917—*Concluded.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Law Costs—Con.	$ cts.	$ cts.
Bray, G.	Rex *vs.* O. Clark	10 00	
Leblane, A.	" A. Clement	48 00	
Burnett, A.	" P. Meyers	24 52	
	" C. B. Kolstod	8 03	
Wells, Thos.	" Mrs. L. Burtis	40 00	
	" W. Bone	40 00	
Milton, Pike J.	" J. A. Maeckners	10 00	
	" Brewesters, Ltd	10 00	
	" King Edward Grocery	10 00	
	" W. J. Mindorf	10 00	
	" Smith's Grocery	10 00	
	" W. A. Sample	20 00	
	" Burnie & Co	20 00	
Neff, Garnet C.	" A. Jelbert	20 00	
Carrothers & Williams	" P. Carroll	3 00	
Thurston & Co.	" J. Wilson	20 00	
	" L. Enbinder	20 00	
	" J. M. Cox	30 00	
Lamarre, J. S.	" L. J. Lafontaine	10 00	
	" Dominion Wine Vault	24 00	
Levinson, E. R.	" H. Ross	10 00	
	" G. Dewart	10 00	
	" W. S. Dunlop	10 00	
	" H. Finesilver	10 00	
	" N. Sixtet	20 00	
Morphy, W. S.	" H. Wright	20 00	
	" C. H. Falconer	22 50	
Braden, J. E. A.	" Syer Grocery Co	15 00	
	" J. T. Brown	15 00	
Graham J. W.	" Geo. Smith	13 75	
	" L. H. Reesor	13 75	
Champagne, N.	" Darwin's	20 00	
	" J. Davis	10 00	
	" M. Moser	20 00	
	" Joynt's Variety Store	20 00	
	" H. Finkelstein	10 00	
	" L. Fine	10 00	
	" M. Finkelstein	10 00	
Graydon & Graydon	" G. Lamb		
	" W. H. Thornton	188 92	
	" F. E. Jones		
	" C. G. Lewis		
Lefebvre, L. J.	" L. S. Desautels	31 00	
	" J. M. Cavanagh	24 00	
Emard, C.	" A. Larose	24 00	
	" Lecours & Lanetot	20 00	
Beament & Armstrong	" M. Levin	20 00	
	" A. F. Amber	20 00	
Marquis, A. W.	" L. Hattey & Co	20 00	
Robb, G.	" Jas. Wise	20 00	
	" Jas. Bryce	20 00	
	" T. A. Temple	20 00	
Rondeau & Plante	" J. A. D. Godbout	20 00	
Desilets, F.	" O. Prince	10 00	
	" E. Morse	10 00	
	" R. O. Dumont	10 00	
	" Genest & Cloutier	10 00	
	" E. Deshais	10 00	
	" A. Belliveau	20 00	
	" Pharmacie Pelletier	20 00	
	" Pharmacie Williams	20 00	
	" C. Kleimer	20 00	
	" M. Missif	20 00	
	" P. Dufresne	20 00	
	" E. Briere	20 00	
	" A. Boisseau	20 00	3,925 83
			11.955 33

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917.

Division.	To whom paid.	Service.	Amounts paid.	Total amounts paid.
			$ cts.	$ cts.
Montreal	Fox, J. D.	To pay informer ½ penalty No. 1375	50 00	
Toronto	Frankland, H. R.	" " " 430	25 00	
St. Hyacinthe	Cartier, A. P.	" " " 124	12 50	
"	"	" " " 125	12 50	
Montreal	Fox, J. D.	" " " 1371	50 00	
"	"	" " " 1366	200 00	
"	"	" " " 1368	5 00	
"	"	" " " 1355	25 00	
"	"	" " " 1372	5 00	
"	"	" " " 1352	50 00	
"	"	" " " 1374	2 50	
Joliette	Mainville, C. P.	" " " 148	12 50	
Vancouver	Thorburn, Jas.	" " " 74	25 00	
St. Hyacinthe	Cartier, A. P.	" " " 119	12 50	
"	"	" " " 126	12 50	
Montreal	Fox, J. D.	" " " 1347	50 00	
Vancouver	Thorburn, Jas.	" " " 73	25 00	
St. Hyacinthe	Cartier, A. P.	" " " 113	12 50	
"	"	" " " 123	50 00	
"	"	" " " 127	12 50	
"	"	" " " 128	12 50	
"	"	" " " 129	12 50	
"	"	" " " 130	12 50	
"	"	" " " 5663	12 50	
Quebec	Arcand, D.	" " " 659	25 00	
St. John	Belyea, T. H.	" " " 207	25 00	
"	"	" " " 208	50 00	
Montreal	Fox, J. D.	" " " 1347	100 00	
Joliette	Maniville, C. P.	" " " 146	50 00	
Montreal	Fox, J. D.	" " " 1365	25 00	
Quebec	Arcand, D.	" " " 660	25 00	
Montreal	Fox, J. D.	" " " 5681	85 00	
St. Hyacinthe	Cartier, A. P.	" " " 135	2 50	
"	"	" " " 134	50 00	
Vancouver	Thorburn, Jas.	" " " 75	25 00	
St. Hyacinthe	Cartie :,A .P.	" " " 136	12 50	
"	"	" " " 137	12 50	
Montreal	Fox, J. D.	" " " 1380	5 00	
St. Hyacinthe	Cartier, A. P.	" " " 139	50 00	
Ottawa	Goulet, A.	For his share in Seizure No. 238	25 00	
"	"	" " " 243	15 00	
"	"	" " " 245	15 00	
"	"	" " " 246	25 00	
"	"	" " " 247	25 00	
"	"	" " " 248	10 00	
"	"	" " " 252	15 00	
Perth	"	" " " 16	52 00	
"	"	" " " 17	52 00	
Prescott	"	" " " 45	23 75	
Ottawa	Ford, F. W.	" " " 237	20 00	
"	"	" " " 238	25 00	
"	"	" " " 239	50 00	
Prescott	"	" " " 45	23 75	
Toronto	Johnston, E. J. A.	" " " 430	12 38	
"	Halley, W. J.	" " " 430	12 37	
Joliette	Mainville, C. P.	" " " 147	14 72	
"	Kearney, D. J.	" " " 147	14 72	
"	Brabant, G. N.	" " " 147	14 71	
"	Roy, M. A.	" " " 148	6 95	
"	Barrette, J. E.	" " " 148	6 95	
Montreal	Kearney, D. J.	" " " 1262	12 55	
"	"	" " " 1265	0 25	
"	"	" " " 1291	0 46	
"	"	" " " 3	2 33	
"	"	" " " 4	1 75	

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917—*Continued.*

Division.	To whom paid.	Service.	Amounts paid.	Total amounts paid.
			$ cts.	$ cts.
Montreal	Kearney, D. J.	For his share in Seizure No. 5	1 75	
"	"	" " " 6	0 25	
"	"	" " " 9	1 50	
"	"	" " " 1309	24 84	
"	"	" " " 1310	1 41	
"	"	" " " 1	5 75	
"	"	" " " 2	4 00	
"	"	" " " 3	1 00	
"	"	" " " 5	0 75	
"	"	" " " 6	2 50	
"	"	" " " 1327	9 12	
"	"	" " " 1332	62 25	
"	"	" " " 5	2 11	
"	"	" " " 6	5 00	
"	"	" " " 8	1 75	
"	"	" " " 9	4 59	
"	"	" " " 1342	17 29	
"	"	" " " 3	17 62	
"	"	" " " 7	124 88	
"	"	" " " 8	1 50	
"	"	" " " 1351	32 31	
"	"	" " " 2	48 82	
"	"	" " " 4	89 52	
"	"	" " " 5	26 64	
"	"	" " " 8	12 00	
"	"	" " " 1360	13 12	
"	"	" " " 2	89 86	
"	"	" " " 3	25 60	
"	"	" " " 5	11 90	
"	"	" " " 6	115 87	
"	"	" " " 7	10 72	
"	"	" " " 8	2 77	
"	"	" " " 9	5 05	
"	"	" " " 1370	6 30	
"	"	" " " 1371	31 50	
"	"	" " " 2	1 78	
"	"	" " " 4	0 63	
"	"	" " " 5	16 00	
"	"	" " " 5681	85 00	
"	Brabant, G. N.	" " " 1254	2 50	
"	"	" " " 1260	5 10	
"	"	" " " 2	12 55	
"	"	" " " 5	0 25	
"	"	" " " 1291	0 47	
"	"	" " " 3	2 33	
"	"	" " " 4	1 75	
"	"	" " " 5	1 75	
"	"	" " " 6	0 25	
"	"	" " " 9	1 50	
"	"	" " " 1309	24 84	
"	"	" " " 1310	1 42	
"	"	" " " 1	5 75	
"	"	" " " 2	4 00	
"	"	" " " 3	1 00	
"	"	" " " 5	0 75	
"	"	" " " 6	2 50	
"	"	" " " 1327	9 13	
"	"	" " " 1332	62 25	
"	"	" " " 5	2 12	
"	"	" " " 6	5 00	
"	"	" " " 8	1 75	
"	"	" " " 9	4 59	
"	"	" " " 1342	17 29	
"	"	" " " 3	17 62	
"	"	" " " 1347	124 88	

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917—*Continued.*

Division.	To whom paid.	Service.	Amounts paid.	Total amounts paid.
			$ cts.	$ cts.
Montreal	Brabant, G. N.	For his share in Seizure No. 1348	1 50	
"	"	" " " 1351	32 31	
"	"	" " " 2	48 83	
"	"	" " " 4	89 52	
"	"	" " " 5	26 64	
"	"	" " " 8	12 00	
"	"	" " " 1360	13 13	
"	"	" " " 2	89 87	
"	"	" " " 3	25 61	
"	"	" " " 5	11 90	
"	"	" " " 6	115 87	
"	"	" " " 7	10 73	
"	"	" " " 8	2 78	
"	"	" " " 9	5 05	
"	"	" " " 1370	6 30	
"	"	" " " 1	31 50	
"	"	" " " 2	1 77	
"	"	" " " 1374	0 62	
"	"	" " " 1375	16 00	
"	Fox, J. D.	" " " 1291	0 47	
"	"	" " " 1293	2 34	
"	"	" " " 1294	1 75	
"	"	" " " 1310	1 42	
"	"	" " " 1313	1 00	
"	"	" " " 1366	115 86	
"	"	" " " 1375	16 00	
"	Costigan, J. J.	" " " 1351	32 32	
"	Provost, J.	" " " 1344	31 08	
"	Pageau, G.	" " " 1344	31 07	
"	Lefebvre, A.	" " " 1370	6 30	
St. Hyacinthe	Cadotte, J. A.	" " " 101	9 10	
"	"	" " " 2	9 10	
"	"	" " " 3	21 60	
"	"	" " " 4	14 10	
"	"	" " " 5	14 10	
"	"	" " " 7	13 01	
"	"	" " " 8	8 01	
"	"	" " " 9	23 52	
"	"	" " " 110	14 23	
"	"	" " " 1	19 33	
"	"	" " " 2	9 23	
"	"	" " " 3	9 23	
"	"	" " " 4	10 23	
"	"	" " " 5	11 50	
"	"	" " " 8	4 50	
"	"	" " " 9	4 47	
"	"	" " " 120	2 32	
"	"	" " " 1	2 32	
"	"	" " " 3	45 12	
"	"	" " " 4	4 30	
"	"	" " " 6	8 30	
"	Raymond, J. C.	" " " 118	4 50	
"	"	" " " 119	4 48	
"	Galipeau, P. A.	" " " 122	13 75	
Quebec	Hardy, L.	" " " 652	18 65	
"	"	" " " 4	3 48	
"	"	" " " 5615	6 25	
"	Côté, R.	" " " 654	3 47	
"	"	" " " 5615	6 25	
Winnipeg	Verner, T. H.	" " " 71	75 00	
"	Fegan, P. J.	" " " 71	75 00	
Vancouver	Thorburn, J.	" " " 74	26 00	
St. John	Kelly, J. T.	To pay informer ½ penalty No. 209	25 00	
St. Hyacinthe	Cartier, A. P.	" " " 140	12 50	

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2—Distribution of Seizures for the Year ended March 31, 1917—*Continued.*

Division.	To whom paid.	Service.	Amounts paid.	Total amounts paid.
			$ cts.	$ cts.
Montreal	Fox, J. D.	To pay informer ½ penalty No. 1384	50 00	
"	"	" " " 1385	25 00	
Quebec	Arcand, D.	" " " 5680	12 50	
"	"	" " " 5708	50 00	
"	"	" " " 665	12 50	
Montreal	Fox, J. D.	" " " 1352	50 00	
Halifax	James, T. C.	" " " 191	25 00	
Quebec	Arcand, D.	" " " 666	12 50	
"	"	" " " 665	50 00	
Montreal	Fox, J. D.	" " " 1332	125 00	
Quebec	Arcand, D.	" " " 667	50 00	
Vancouver	Thorburn, Jas.	" " " 79	12 50	
"	"	" " " 79	12 50	
"	"	" " " 76	12 50	
"	"	" " " 76	12 50	
"	"	" " " 77	12 50	
"	"	" " " 77	12 50	
"	"	" " " 78	12 50	
"	"	" " " 78	12 50	
Montreal	Fox, J. D.	" " " 1359	25 00	
Three Rivers	Duplessis, C. Z.	" " " 119	50 00	
Winnipeg	Verner, T. H.	" " " 72	100 00	
Montreal	Fox, J. D.	" " " 1359	200 00	
"	"	" " " 1390	200 00	
Quebec	Arcand, D.	" " " 662	50 00	
"	"	" " " 667	25 00	
Ottawa	Forde, F. W.	For his share in Se zure No. 235	100 00	
"	"	" " " 240	50 00	
"	"	" " " 249	15 00	
"	"	" " " 256	15 00	
"	"	" " " 257	14 25	
"	"	" " " 258	14 25	
"	"	" " " 259	9 25	
"	"	" " " 260	14 25	
"	"	" " " 261	14 25	
"	"	" " " 263	14 25	
"	"	" " " 266	14 25	
"	"	" " " 268	5 00	
"	"	" " " 269	5 00	
Perth	"	" " " 18	49 75	
"	"	" " " 19	49 75	
"	"	" " " 20	22 90	
"	"	" " " 21	19 00	
"	"	" " " 24	24 25	
"	"	" " " 25	24 25	
"	"	" " " 26	9 25	
Prescott	"	" " " 45	2 12	
"	"	" " " 48	24 43	
"	"	" " " 49	24 50	
"	"	" " " 50	12 00	
"	"	" " " 51	24 50	
"	"	" " " 52	4 30	
Ottawa	Goulet, A.	" " " 241	5 00	
"	"	" " " 242	5 00	
"	"	" " " 253	25 00	
"	"	" " " 267	7 50	
Prescott	"	" " " 45	2 13	
"	"	" " " 46	22 75	
"	"	" " " 47	23 00	
"	"	" " " 48	24 42	
"	"	" " " 49	24 50	
"	"	" " " 50	12 00	
"	"	" " " 51	24 50	
Ottawa	Laverdure, E.	" " " 241	5 00	

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917—*Continued.*

Division.	To whom paid.	Service.	Amounts paid.	Total amounts paid.
			$ cts.	$ cts.
Ottawa	Laverdure, E.	For his share in Seizure No. 267	7 50	
"	"	" " " 268	5 00	
"	"	" " " 269	5 00	
Stratford	Tobin, T.	" " " 5715	10 00	
Montreal	Kearney, D. J.	" " " 1274	0 63	
"	"	" " " 1284	0 70	
"	"	" " " 1298	1 66	
"	"	" " " 1309	5 50	
"	"	" " " 1311	10 50	
"	"	" " " 1312	0 87	
"	"	" " " 1328	0 33	
"	"	" " " 1343	150 00	
"	"	" " " 1347	0 80	
"	"	" " " 1348	0 50	
"	"	" " " 1351	0 33	
"	"	" " " 1352	50 50	
"	"	" " " 1374	0 12	
"	"	" " " 1377	6 62	
"	"	" " " 1378	8 50	
"	"	" " " 1380	3 50	
"	"	" " " 1384	23 00	
"	"	" " " 1385	8 33	
"	Brabant, G. N.	" " " 1274	0 62	
"	"	" " " 1284	0 70	
"	"	" " " 1298	1 67	
"	"	" " " 1309	5 50	
"	"	" " " 1311	10 50	
"	"	" " " 1312	0 88	
"	"	" " " 1328	0 33	
"	"	" " " 1343	150 00	
"	"	" " " 1347	0 80	
Montreal	Brabant, G. N.	" " " 1348	0 50	
"	"	" " " 1351	0 33	
"	"	" " " 1352	50 50	
"	"	" " " 1374	0 13	
"	"	" " " 1377	6 63	
"	"	" " " 1378	8 50	
"	"	" " " 1380	3 50	
"	"	" " " 1384	23 00	
"	"	" " " 1385	8 33	
"	Navert, E.	" " " 1298	1 67	
"	Lambert, J A.	" " " 1328	0 34	
"	Costigan, J J.	" " " 1351	0 34	
"	Fox, J. D.	" " " 1385	8 34	
Quebec	Hardy, L.	" " " 656	10 1[illegible]	
"	"	" " " 657	85 16	
"	"	" " " 658	3 26	
"	"	" " " 659	5 65	
"	"	" " " 660	20 75	
"	"	" " " 665	24 68	
"	"	" " " 666	0 65	
"	"	" " " 5708	50 00	
"	"	" " " 5680	12 50	
"	Côté, P.	" " " 657	85 16	
"	"	" " " 658	3 27	
"	"	" " " 665	24 67	
"	"	" " " 666	0 65	
St. Hyacinthe	Cadotte, J. A.	" " " 127	5 00	
"	"	" " " 128	4 75	
"	"	" " " 129	3 37	
"	"	" " " 130	3 25	
"	"	" " " 132	3 75	
"	"	" " " 134	21 74	
"	"	" " " 135	1 00	

APPENDIX B.—No. 2.—Distribution of Seizures for the Year ended March 31, 1917—*Concluded.*

Division.	To whom paid.	Service.	Amounts paid.	Total amounts paid.
			$ cts.	$ cts.
St. Hyacinthe	Cadotte, J. A.	For his share in Seizure No. 136	6 12	
"	"	" " " 137	5 63	
"	"	" " " 139	25 00	
"	"	" " " 140	6 25	
"	"	" " " 5663	12 50	
"	Raymond, J. C.	" " " 127	5 00	
"	"	" " " 128	4 75	
"	"	" " " 129	3 38	
"	"	" " " 130	3 25	
"	"	" " " 132	3 75	
"	"	" " " 134	21 74	
"	"	" " " 135	1 00	
"	"	" " " 136	6 13	
"	"	" " " 137	5 62	
"	"	" " " 139	25 00	
"	"	" " " 140	6 25	
"	Rouleau, J. C.	" " " 134	21 75	
Three-Rivers	Trudel, A.	" " " 119	50 00	
St. John	Kelly, J. T.	" " " 207	25 00	
"	"	" " " 208	45 45	
"	"	" " " 209	19 75	
Halifax	Blethen, G.	" " " 191	12 50	
"	Hubley, H. H.	" " " 191	12 50	
Vancouver	Thorburn, Jas.	" " " 75	22 50	
Quebec	D. Arcand	To pay informer ½ penalty collected No. 669	12 50	
Sherbrooke	Belisle, J. C.	" " " 221	25 00	
Quebec	Arcand, D.	" " " 221	75 00	
		Total		7,646 00

RECAPITULATION.

Ontario	$ 1,210 30
Quebec	5,722 00
New Brunswick	190 20
Nova Scotia	50 00
Manitoba	250 00
British Columbia	223 50
	$ 7,646 00

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917.

To whom paid.	Service.	Deductions for guarantee.	Amounts paid.	Total amounts paid.
	EXCISE PREVENTIVE OFFICERS.	$ cts.	$ cts.	$ cts.
	Brantford.			
Carson, J. F.	Salary as Preventive Officer for the year	0 81	899 19	899 19
	Hamilton.			
Hanham, J. H.	Salary as Preventive Officer from June 1, 1916 to March 31, 1917	0 81	749 19	
Smith, J. F.	" " from June 12, 1916 to March 31, 1917	0 72	802 02	
		1 53	1,551 21	1,551 21
	London.			
Miller, C. W.	Salary as Preventive Officer for the year	0 81	899 19	
McCort, Jas.	" " "	0 81	899 19	
		1 62	1,798 38	
	Contingencies		2 90	1,801 28
	Ottawa.			
Baron, J. H.	Salary as Preventive Officer for the year	1 53	949 18	
Denninson, F.	" " " "	0 90	899 10	
Cryne, J.	" " " "	0 90	883 80	
Harty, M. J.	" " " "	0 90	899 10	
Goulet, A.	" " " "	0 90	899 10	
Laverdure, E.	" " " "	0 90	899 10	
Labelle, V.	" " " "	0 90	899 10	
Boudreault, J. H. L.	" " " "	0 90	899 10	
Roy, E.	" " from June 22, 1916 to March 31, 1917	0 90	696 60	
Corbeil, A.	" " from January 1, 1917 to March 31, 1917	0 72	161 76	
		9 45	8,085 94	
	Contingencies		528 82	8,614 76
	Toronto.			
Floody, E.	Salary as Preventive Officer for the year	1 98	1,198 02	1,198 02
	Windsor.			
Wickens, A.	Salary as Preventive Officer for the year	0 81	899 19	
Lamont, S.	" " from July 11, 1916 to March 31, 1917	0 81	649 99	
		1 62	1,549 18	1,549 18
	Joliette.			
Roy, A.	Salary as Preventive Officer from April 1, to March 31, 1917	0 81	899 19	
Coutu, E. C.	" " for the yare	0 81	899 19	
Champagne, J. O.	" " "	0 81	899 19	
Pauzé, C. E.	" " from April 1, to March 31, 1917	1 26	273 74	
		3 69	2,971 31	
	Contingencies		399 96	3,371 27

SESSIONAL PAPER No. 12

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for guarantee.	Amounts paid.	Total amounts paid.
	EXCISE PREVENTIVE OFFICERS—*Con.*	$ cts.	$ cts.	$ cts.
	Montreal.			
Ledoux, H.	Salary as Preventive Officer for the year	0 90	1,199 10	
Rainville, J. E.	" " "	0 90	1,199 10	
Cousineau, H.	" " "	0 90	999 06	
Hughes, M.	" " "	0 90	999 06	
Lafleur, G. B.	" " died March 23, 1917	0 90	999 06	
Loranger, G. A.	" " for the year	0 90	999 06	
Houde, J. A. D.	" " "	0 90	999 06	
Deschambault, E.	" " "	0 90	899 10	
Coté, B.	" " "	0 90	899 10	
Guilbault, A.	" " "	0 90	899 10	
Smith, D. J.	" " "		300 00	
Gauthier, W.	" " "	0 90	899 10	
Ouimet, A. L.	" " "	0 90	899 10	
Thérien, E. E. C.	" " "	0 90	899 10	
Navert, C.	" " "	0 90	899 10	
Labelle, J. D.	" " "	0 90	899 10	
Lawrence, E.	" " "	0 90	899 10	
Ross, W. L.	" " "	0 90	899 10	
Lefebvre, S.	" " "	0 90	882 16	
Poirier, W.	" " from October 1, 1916 to March 31, 1917	0 99	599 01	
Brabant, J. B. G. N.	" " from Nov. 1, 1916, died, Feb. 17, 1917	0 66	165 98	
Pageau, J. G.	" " for the year	0 72	899 28	
Warren, G. S.	" " "	0 72	899 28	
Brossard, W.	" " from Oct. 1, to Mar. 31, 1917	0 72	599 28	
Dansereau, G. A.	" " for the year	0 72	899 28	
Barnes, F.	" " "	0 72	899 28	
Bessette, H.	" " "	0 72	899 28	
		22 17	23,427 33	
	Contingencies		1,342 07	
				24,769 40
	Quebec.			
Coté, F. X.	Salary as Preventive Officer for the year	0 81	899 19	
Fortin, J.	" " "	0 81	899 19	
Duggan, E.	" " "	0 81	899 19	
Robitaille, L. P.	" " "	0 81	899 19	
Bolduc, L. P.	" " "	0 81	584 27	
Paquet, L.	" " from Oct. 2, 1916 to Mar. 31, 1917	0 81	446 77	
Fiset, A.	" " for the year	0 81	896 77	
Bouchard, J. M. A.	" " "	0 72	899 28	
Traversy, F. X.	" " "	0 72	899 28	
Gagnon, J. D.	" " "	0 72	899 28	
Poirier, J. B. E.	" " from Feb. 19 to Mar. 31, 1917		101 78	
Belleau, St. F.	" " from Feb. 19 to Mar. 31, 1917		113 09	
		7 83	8,437 28	
	Contingencies		2,688 19	
				11,125 47
	Sherbrooke.			
Somers, T. S.	Salary as Preventive Officer for the year	0 81	899 19	
	Contingencies		224 27	
				1,123 46

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for guarantee.	Amounts paid.	Total amounts paid.
	EXCISE PREVENTIVE OFFICERS—*Con.*	$ cts.	$ cts.	$ cts.
	St. Hyacinthe.			
Cadotte, J. A.	Salary as Preventive Officer for the year	0 81	899 19	
Raymond, J. C.	" " " "	0 81	899 19	
Surprenant, J.	" " " "	0 81	899 19	
Labonte, F. X.	" " " "	0 81	1,199 19	
Chaput, N. J.	" " " "	0 72	899 28	
Lamoureux, H.	" " " "	0 72	899 28	
Richard, Jos.	" " from Feb. 1 to Mar. 31, 1917	0 24	149 76	
		4 92	5,845 08	
	Contingencies		516 32	
				6,361 40
	Three Rivers.			
Quesnel, G. A.	Salary as Preventive Officer for the year	0 81	899 19	
Trudel, A.	" " " "	0 81	899 19	
Thivierge, P.	" " " "	0 24	899 76	
		1 86	2,698 14	
	Contingencies		3 75	
				2,701 89
	St. John.			
Kelly, J. T.	Salary as Preventive Officer for the year	1 26	998 70	
	Contingencies		982 93	
				1,981 63
	Halifax.			
Healey, T. J.	Salary as Preventive Officer for the year	0 81	899 19	
	Contingencies		512 40	
				1,411 59
	Pictou.			
	Contingencies			1,008 49
	Charlottetown.			
Arsenault, J. F.	Salary as Preventive Officer from Oct. 23, 1916 to Mar. 31, 1917	0 81	351 84	
	Contingencies		350 90	
				702 74
	Winnipeg.			
Cosgrove, J. B.	Salary as Preventive Officer for the year	0 81	899 19	
Belanger, A.	" " " "	0 81	899 19	
Ashton, H.	" " " "	0 72	899 28	
Davis, T. J.	" " from Jan. 1 to March 31, 1917	0 24	224 76	
		2 58	2,922 42	
	Contingencies		799 92	3,722 34
	Moosejaw.			
Danis, J. M.	Salary as Preventive Officer from March 22 to Mar. 31, 1917	0 08	32 17	
	Contingencies		100 55	
				132 72
	Calgary.			
Fidler, E.	Salary as Preventive Officer for the year	0 81	899 19	
Joughin, W. J. C.	" " " "	0 81	899 19	
Richards, D. H.	" " " "	0 81	899 19	
		2 43	2,697 57	2,697 57

APPENDIX B.—No. 2 (A).—Details of Excise Preventive Expenditures for the Year ending March 31, 1917—*Concluded.*

To whom paid.	Service.	Deductions for guarantee.	Amounts paid.	Total amounts paid.
	EXCISE PREVENTIVE OFFICERS—*Con.*	$ cts.	$ cts.	$ cts.
	Vancouver.			
Grantham, J. A.	Salary as Preventive Officer for the year	0 81	899 19	
Brown, R. H.	" " "	0 81	899 19	
Quinn, Thos.	" " "	0 81	899 19	
		2 43	2,697 57	
	Contingencies		1,078 58	
				3,776 15
	Totals	68 69		80,499 76

RECAPITULATION.

Excise Preventive salaries	$	69,959 71
" Contingencies		10,540 05
	$	80,499 76

See Statement No. 5.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

Appendix B.—No. 2 (B).—Details of Weights and Measures Preventive Expenditures for the Year ending March 31, 1917.

To whom paid.	Service.	Guarantee.	Amounts paid.	Total amounts paid.
	Weights and Measures Preventive.	$ cts.	$ cts.	$ cts.
	Kingston.			
Duffy, W.	Salary as Preventive officer for the year...	54	899 46	899 46
	Ottawa.			
Barbeau, C.				
Charbonneau, J. A.	Salary as Preventive Officer for the year..	63	899 37	
Dugal, G. A.	" " " ..	63	899 37	
Ruel, A.	" " " ..	63	899 37	
	" " from July 26, 1916 to March 31, 1917.	45	614 06	
		2 34	3,312 17	3,312 17
	Montreal.			
Lanthier, E.	Salary as Preventive Officer for the year...	63	899 37	
Baudet, E.	" " from Nov. 1st, 1916 to Mareh 31, 1917.	63	82 67	
		1 26	982 04	982 04
	St. Hyacinthe.			
Landry, Wm.	Salary as Preventive Officer for the year...	54	899 46	
Desilets, J. A.	" " " ..	54	899 46	
		1 08	1,798 92	1,798 92
	Halifax.			
Bowles, H. W.	Salary as Preventive Officer for the year..	54	899 46	899 46
	Charlottetown.			
Walker, M. W. W.	Salary as Preventive Officer for the year..	.....	899 46	899 46
	Winnipeg.			
Sparling, E. J.	Salary as Preventive Officer from July 3, 1916 to March 31, 1917.	54	669 62	669 62
	Calgary.			
Green, Wm.	Salary as Preventive Officer from November 1st, 1916 to March 31, 1917.	54	374 46	374 46
	Edmonton.			
Farrell, W. G.	Salary as Preventive Officer for the year..	54	899 46	
McLeod, John	" " from July 10, 1916 to Mareh 31, 1917.	54	652 68	
	Regina.	1 08	1,552 14	1,552 14
McDonagh, J. A.	Salary as Preventive Officer from April 11 to March 31, 1917.	54	874 46	
Shaw, A. I.	" " for the year..	54	899 46	
Eadie, J.	" " " ..	54	899 46	
	Saskatoon.	1 62	2,673 38	2,673 38
Greig, J. T.	Salary as Preventive Officer for the year..	54	899 46	899 46
	Total.	10 62	.....	14,960 57

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.

No. 3.—Details of Sundry Minor Expenditures for the Year ended March 31, 1917.

To whom paid.	Place of residence.	Service.	Amounts paid.	Total amounts paid.
		Proprietary or Patent Medicine Act.	$ cts.	$ cts.
Blackader, Dr. A. D	Montreal	For consultation as expert	400 00	
Rudolf, Dr. R. D	Toronto	" "	400 00	
Blewett, F. R	Stratford	Law costs Rex *vs.* John Dykes	10 00	
Gagnon, O	Montreal	" " Johnson, Richardson, Co., Ltd	20 00	
Foxwall, W. E	Victoria	Refund of Registration fee	1 00	
Thurston & Co	Toronto	Law costs Rex *vs.* Kern Co., Ltd	20 00	
				851 00

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—*Continued.*

No. 4.—Details of Adulteration of Food Expenditures for the Year ended March 31, 1917.

To whom paid.	Service.	Deductions for		Amounts paid.	Total amounts paid.
		Superannuation.	Guarantee.		
	Kingston.	$ cts.	$ cts.	$ cts.	$ cts.
Hogan, J.	Salary as Inspector for the year		1 08	198 84	
	Contingencies			142 86	341 70
	London.				
Talbot, J.	Salary as Inspector for the year		1 08	198 84	
	Contingencies			375 60	574 44
	Ottawa.				
Forde, F. W.	Salary as Inspector from November 8, 1916 to March 31, 1917		42	78 99	78 99
	Toronto.				
Dager, H. J.	Salary as Inspector for the year		1 08	198 84	
	Contingencies			180 43	379 27
	Montreal.				
Kearney, D. J.	Salary as Inspector for the year		1 08	398 88	
Costigan, J. J.	" "	9 96	1 08	488 88	
	Contingencies			956 51	1,844 27
	Quebec.				
Beland, F. X. W. E.	Salary as Inspector for the year		1 08	298 92	
	Contingencies			372 60	671 52
	St. Hyacinthe.				
Rouleau, J. C.	Salary as Inspector for the year		1 08	198 84	
	Contingencies			5 48	204 32
	St. John, N.B.				
Ferguson, J. C.	Salary as Inspector for the year	3 96	1 08	194 88	
	Contingencies			371 78	566 66
	Halifax.				
Waugh, R. J.	Salary as Inspector for the year			348 84	
	Contingencies			256 48	605 32
	Cape Breton, "Sydney"				
Mackeen, E. T.	Salary as Inspector for the year		1 08	198 84	198 84
	Charlottetown.				
Arsenault, J. F.	Salary as Inspector from October 23, 1916 to March 31, 1917		0 47	87 66	
	Contingencies			126 80	214 46
	Winnipeg.				
Cosgrove, J. B.	Contingencies				455 09
	Calgary.				
Markley, A. W. R.	Salary as Inspector for the year		1 08	298 92	
	Contingencies			296 13	595 05

No. 4.—Details of Adulteration of Food Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for		Amounts paid.	Total amounts paid.
		Superannuation.	Guarantee.		
	Saskatchewan.	$ cts.	$ cts.	$ cts.	$ cts.
Danis, J. M	Salary as Inspector from 22 to 31 March, 1917		0 03	16 10	16 10
	Nelson.				
Parker, T	Salary as Inspector for the year		1 08	198 84	
	Contingencies			207 10	405 94
	Vancouver.				
Morgan, E. J	Salary as Inspector for the year		0 36	66 28	
	Contingencies			73 38	139 66
	Victoria.				
O'Sullivan, D	Salary as Inspector from April 1 to June 1, 1916		0 18	33 14	
				24 55	57 69
		13 92	14 42		7,349 32

APPENDIX B—*Continued.*

No. 4.—Details of Adulteration of Food Expenditures for the Year ended March 31, 1917.

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Adulteration of Food.	$ cts.	$ cts.
	Contingencies.		
McGill, A., Ottawa Laboratory..	Special Assistance	1,298 30	
	Sundries	2,013 91	
			3,312 21
Forward, Halifax Laboratory....	Special assistance	240 00	
	Sundries	1,483 54	
			1,723 54
Forster, Winnipeg Laboratory....	"	292 93	292 93
Dawson, Vancouver Laboratory..	"	531 95	531 95
Dager, H. J., Hamilton	Travelling expenses and purchases of samples		418 48
Rickey, J. A., Ottawa	" "		99 15
Brochu, O., Armagh	" "		233 26
Parent, A., Montreal	" "		124 81
Gendreau, T., Montmagny	" "		276 38
Blondin, E., Pierreville	" "		891 07
LaRue, J. B., Quebec	" "		166 64
Robitaille, L. P., Quebec	" "		200 00
Lortie, J. A., Quebec	" "		31 23
Audet, J. E., St. Anselme	" "		448 71
Rioux, J. H., St. Fabien	" "		218 26
Lavallee, V. P., St. Felix de Valois	" "		750 82
Cadieux, N., St. Jerome	" "		290 19
Deschenes, E., St. Octave	" "		157 55
Pelletier, A., Ste. Perpetue	" "		537 48
Roy, F. X., St. Philippe de Neri	" "		100 00
Petipas, W. A., Tracadie	" "		193 72
Hall, L. H., Moosejaw	" "		640 48
Armytage, G. G., Vancouver	" "		974 17
			19,952 35
	General Contingencies.		
Dessaint, Mrs., Ottawa	For cleaning Laboratory	480 00	
Guimond, Mrs., Ottawa	" "	313 00	
Turpin, Mrs., Ottawa	" "	313 00	
Lafleur, Mrs., Ottawa	" "	313 00	
Paulin, Mrs., Ottawa	" "	235 00	
Farmer, Mrs., Ottawa	" "	85 00	
Pratt, Mrs., Ottawa	" "	222 00	
			1,961 00
Morisset, M., Ottawa	Special translation	201 15	
Fissiault, J. A., Ottawa	"	221 40	
			422 55
Ellis, Dr. W. H., Toronto	Retaining fees as member of Advisory Board of Food standards	400 00	
Donald, Dr. J. T., Montreal	" " "	400 00	
			800 00
Girdwood, Dr. G. P., Montreal..	Travelling expenses *re* Board of Examiners	75 00	
Choquette, Rev. C. P., St. Hyacinthe	" "	80 75	
			155 75
The Ontario Hughes Owens Co., Ottawa	Apparatus for Ottawa Laboratory	261 02	
Bank of Montreal, Ottawa	Draft purchase to pay for apparatus from Eimer & Amend	134 17	
The B.C. Assays Chemical Supply Co., Ltd	Apparatus for Laboratory	618 90	
The Topley Co., Ottawa	Chemical supplies for Laboratory	2,807 56	
The Pritchard & Andrews Co., Ltd	To repairs of stamps	8 70	

No. 4.—DETAILS of Adulteration of Food Expenditures for the year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	ADULTERATION OF FOOD—*Con.*	$ cts.	$ cts.
	General Contingencies—Con.		
Lymans, Ltd., Montreal	Chemical supplies for Laboratory	99 87	
Collector of Customs, Ottawa	Duty paid on goods	35 32	
Gooderham & Worts, Ltd., Toronto	Goods for Ottawa Laboratory	38 10	
R. H. Pringle & Co., Ottawa	American express	0 90	
General Supply Co. of Canada, Ltd., Ottawa	1 propeller for fan	4 75	
			4,009 29
	Law Costs.		
MacKinnon, J. L., Halifax	Law costs Rex *vs.* A. J. Keddy	40 00	
"	" H. E. Walker	40 00	
Leblanc, A., Montreal	" Leblanc	53 20	
Tweedie, McGillivray, Burrow & Oldham, Calgary	" W. McLean	10 00	
"	" John Irwin Co	10 00	
Wells, T., Ingersoll	" W. Stone Sons, Ltd	20 00	
Murray & McKinnon, Halifax	" Melvin	10 00	
	" Corkum & Ratcey, Ltd	10 00	
	" Wm. Moore	20 00	
	" J. R. Rawley	10 00	
	" Bauld Bros	10 00	
	" A. L. Melvin	20 00	
Graham, J. W., St. Mary's	" Dickson's, Ltd	10 65	
Thompson, T. H., Mitchell	" W. R. Cole	10 00	
Sangster, H. W., Windsor	" T. H. Curry	10 00	
	" New England Fertilizer	10 00	
Gagnon, O., Montreal	" Dupuy & Ferguson	60 00	
	" Mount La Salle Grocery	23 50	
	" Canada Maple Exchange	22 40	
	" J. Culos	14 00	
	" I. Getz	20 00	
	" W. J. Pilon	20 00	
	" Dr. V. Rheaume	20 00	
Baird, W. J., Vancouver	" Brown Bros. Co	10 10	
	" Jack Lew	10 00	
	" Vancouver Drug Co	19 58	
	" Red Rose Grocery	5 00	
	" S. T. Wallace	22 00	
	" J. W. Bryan	37 50	
	" W. Cowling	21 65	
	" W. H. Edgett & Co	30 00	
Aikman, J. A., Victoria	" Sylvester Bros	10 00	
Piette, J. A., Joliette	" A. Chaussé	10 00	
	" A. Goulet	10 00	
	" Gravel & Brady	10 00	
	" Besure & Chasls	6 50	
Plante, A., Valleyfield	" U. Brooks	20 00	
	" Besure & Chasls	22 00	
	" J. St. Louis	10 00	
Graydon & Graydon, London	" A. M. Hamilton & Son	25 00	
	" H. English *et al*	80 00	
Blewett, F. R., Stratford	" Nectar Mfg. Co	54 80	
Bowbley, D. S., Berlin	" E. G. Lang	79 06	
Abbott, A., Trenton	" D. A. Parkes	5 00	
Mulcaster, R., Prince Albert	" W. H. Rowe	10 25	
	" J. A. Stewart	10 25	
Jermyn, J. W., Saskatoon	" P. H. Coad	11 59	
Carnew, W., Belleville	" F. O. Diamond	10 00	
Andrews, Andrews, Coale, &c., Winnipeg	" L. Keplan	20 00	
	" B. Gimouski	10 00	
	" Freedman & Goldsmith	20 00	

No. 4.—Details of Adulteration of Food Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Adulteration of Food—*Con.*	$ cts.	$ cts.
	Law Costs—Con.		
	Law costs Rex *vs.* L. Rosman	10 00	
	" Paskorsky	20 00	
	" Hudson's Bay Co	10 00	
	" Charles Bros	10 00	
Stewart, H. A., Brockville	" Daoust & Belanger	20 00	
Armstrong, A. H., Ottawa	" A. Langdon	20 00	
Macdonald, A. H., Guelph	" J. C. Hadden	15 00	
Laughtin, J. B., Cartwright	" J. W. Carson	15 00	
	" P. D. Evans	15 00	
McCullough & Britton, Uxbridge	" G. S. Vernon	10 00	
McGarry & Costello, Renfrew	" N. Meeken	59 50	
Fauteux & Fauteux, Montreal	" H. Pepin	10 00	
	" M. L. Archambault	14 00	
Fortier, G., St. John	" J. Chartier	20 00	
Thurston & Co., Toronto	" Ontario Fertilizer Co	10 00	
	" R. Simpson Co., Ltd	20 00	
	" Leblanc Bros	20 00	
	" Fleming Bros	20 00	
	" Liggett's, Limited	10 00	
	" T. Arnold	40 00	
	" C. N. Cunningham	20 00	
Rigney, T. J., Kingston	" C. R. McLeod	20 00	
	" F. H. Baker & Co	12 25	
Ross, W. L., Hamilton	" McLees, Ltd	20 00	
	" D. S. Lyne	54 75	
	" Hamilton Importing Co., Ltd.	12 37	
Evans, T. W. W., Beedford	" J. D. Wisdom & Co	41 46	
MacKenzie, C. Y., Boissevain	" W. F. Woodhall	30 00	
Moraud, L., Quebec	" W. Tremblay	10 00	
	" A. Larue	10 00	
	" N. Gagnon	7 80	
	" A. Leclerc	14 50	
	" W. B. Rogers	10 00	
	" G. E. Dussault	13 50	
E. Bailey Fisher, Winnipeg	" G. A. Hunter	15 00	
	" J. J. Mooney	15 00	
Moraud, J. B. L., Quebec	" L. P. Renaud	10 00	
	" J. Andy	10 00	
	" J. Vezina	20 00	
	" S. Vachon	54 60	
Cloutier, R., Waterloo	" L. M. Marcaurale	4 00	
	" H. Cyr	4 00	
Doull, J., New Glasgow	" J. B. Strickland	20 00	
Perkins, W. J., Estevan	" D. L. Irvine	12 52	
Moore, W. H., Peterborough	" C. A. Curran	20 00	
	" E. Oliver	20 00	
	" F. Darling	20 00	
	" Dawson Bros	20 00	
	" S. Mitchell	20 00	
Kidd, W. J., Ottawa	" Canada Maple Exchange	20 00	
Munro, H. H., Stettler	" W. J. Hart	10 00	
Wilkins, E. D. H., Wetaskiwin	" T. F. Ball	10 00	
Elliott, H. B., London	" W. J. Duffin	10 00	
Tweedie, McGillivray & Barron, Calgary	" Jenkins Co	20 00	
	" Langston	15 00	
Shurtleff, W. L., Coaticook	" E. C. Drolet	10 00	
	" L. C. Washburn	10 00	
	" B. M. Robinson	10 00	
	" B. J. Smith	10 00	
	" S. C. Smith	10 00	
Langlois, J. C., Buckingham	" F. W. Warwick	10 00	

No. 4.—Details of Adulteration of Food Expenditures for the Year ended March 31, 1917—*Concluded.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Adulteration of Food—*Con.*	$ cts.	$ cts.
	Law Costs—Con.		
Marquis, A. W., St. Ca harines	Law costs Rex *vs.* C. W. Gibson	10 00	
	" Theal Bros	20 00	
Pitblade, Norkin Co., Winnipeg	" G. Blackwall	47 60	
Bernier, Blackwood & Bernier, Winnipeg	" Collin	20 52	
Levinson, E. R., Winnipeg	" Hardy & Buchannan Co	20 00	
Lawlor, W. A., Chatham	" C. P. Hickey	12 00	
Duchemin, H. P., Sydney	" H. C. Ballen & Co	10 00	
Jermyn & Sibbald, Saskatoon	" R. S. Flemey	87 11	
Berube, L., Frascrville	" J. M. Damien & Cie	42 13	
Macdonald, A., Charlottetown	" J. G. Passmore	20 00	
	" E. Tombs	12 00	
	" A. Peters	12 00	
	" Jenkins & Son	24 00	
	" Beer & Goff	12 00	
	" Carvell Bros	42 81	
Crepeau & Cote, Arthabaska	" N. A. Kirouac & Ewing & Sons	91 25	
Hanna, LeSueur & McKinley, Sarnia	" W. H. Tincher	20 00	
			2,622 70
	Printing		10,575 77
	Stationery		995 32
	Total		41,494 73

RECAPITULATION.

Food Salaries	$ 3,532 87
Contingencies	16,419 48
General Contingencies	9,971 29
Printing	10,575 77
Stationery	995 32
	$41,494 73

See Statement No. 6.

Inland Revenue Department,
Ottawa, July 2, 1917.

J. U. VINCENT,
Deputy Min ster.

Names.		Rank.		Salary.	Period.	Deductions for			Amounts paid.	Total amounts paid.
		Division.	Sub-Division.			Superannuation.	Retirement.	Insurance.		
				$		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Patenaude, Hon. E. L.	Minister			7,000	From Ap. 1 1916 to Jan. 8, 1917				5,381 69	5,381 69
Sévigny, Hon. A.	"			7,000	From Jan. 8 to Mar. 31, 1917				1,618 31	1,618 31
Vincent, J. U.	Deputy Minister			5,000	For the year		250 00		4,750 00	5,000 00
Taylor, G. W.	Asst. Deputy Minister	1	A	3,500	"	86 50		81 00	3,282 50	3,450 00
Valin, J. E.	Chief Accountant	1	A	3,200	From April 1, 1916 to Feb. 1, 1917				2,591 63	2,591 63
Shaw, J. F.	Chief Statistics Clerk	1	A	3,000	For the year				3,000 00	3,000 00
Magnan, Dr. J. A.	Superintendent of Patent Medicines Branch	1	A	3,300	From April 1 to Oct. 31, 1916		96 25		1,828 75	1,925 00
Catellier, C. L.	Secretary	1	A	2,800	For the year		140 00		2,660 00	2,800 00
Doyon, J. A.	Clerk	1	B	2,800	"				2,800 00	2,800 00
Westman, T.	"	1	B	2,700	"	61 98		29 34	2,608 68	2,700 00
Quain, R.	Asst. Accountant	1	B	2,500	From April 1 to Nov. 1, 1916			30 96	1,427 35	1,458 31
Fowler, Geo.	Chief Clerk of Supplies	1	B	2,500	For the year				2,500 00	2,500 00
Gallagher, M. F.	Clerk	1	B	2,200	From April 1, 1916 to Jan. 7, 1917		87 92		1,670 41	1,758 33
"	Private Secretary			600	From April 1, 1916 to Jan. 7, 1917				461 29	461 29
Danis, J. M.	Clerk	1	B	2,100	From Jan. 8 to March 21, 1917		24 27		404 58	428 85
"	Private Secretary			600	" "				122 58	122 58
Chassé, Noel	Clerk	1	B	2,100	From March 22 to March 31, 1917		2 82		53 63	56 45
"	Private Secretary			600	From March 22 to March 31, 1917				16 13	16 13
Lemay, A.	Asst. Accountant	1	B	2,100	For the year		94 79	71 76	1,729 28	1,895 83
Roy, L. G.	Clerk of Estimates	1	B	2,100	"	65 63			1,809 37	1,875 00
Brodeur, P. E. S.	Clerk	2	A	1,900	"		95 00	154 55	1,653 45	1,803 00
Hughes, P. A.	"	2	A	1,850	"	64 75		55 92	1,729 33	1,850 00
McCullough, A.	"	2	A	1,850	"	37 00			1,813 00	1,850 00
Halliday, W. A.	"	2	A	1,800	"	63 00			1,737 00	1,800 00
Smyth, P. L.	"	2	A	1,600	"		80 00		1,520 00	1,600 00
Morisset, M.	Translator	2	A	1,600	From May 9, 1916 to March 31, 1917		71 62		1,360 61	1,432 23
Teevens, L. P.	Clerk	2	A	1,600	For the year		65 00	47 28	1,187 72	1,300 00
Gervais, J. H.	"	2	B	1,600	"		80 00		1,520 00	1,600 00
Allen, A. T.	"	2	B	1,200	"		60 00		1,140 00	1,200 00

Furlong, C. J.	"	3	A	1,200	"		60 00	111 60	1,028 40	1,200 00
Lawless, E. M.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Hagerty, B.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Doyle, E. F.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Goodhue, M. L. E. B.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Trumpour, G.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Evans, C. J.	"	3	A	1,200	"		60 00	41 04	1,098 96	1,200 00
Beard, M. H.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Lewis, H. B.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Lyon, A. V.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Yetts, R. P.	"	3	A	1,200	"	42 00			1,158 00	1,200 00
Robert, A.	"	3	A	1,150	"		57 50		1,092 50	1,150 00
Cantin, J. W. Z.	"	3	A	1,150	"		57 50	53 04	1,039 46	1,150 00
McKell, M. E. E.	"	3	A	1,075	"		48 75		926 25	1,075 00
Lallier, M. A. L.	"	3	B	800	"		40 00		760 00	800 00
O'Connor, M. E.	"	3	B	750	"		37 50		712 50	750 00
Tremblay, J.	"	3	B	650			32 50		617 50	650 00
Rooney, E. A.	"	3	B	800	From June 10, 1916 to March 31, 1917		32 33		614 33	646 66
Ste. Marie, A. J. I.	"	3	B	500	From Feb. 1, 1917 to March 31, 1917		4 17		79 16	83 33
Bourgeois, E.	Messenger			800	For the year		40 00		760 00	800 00
Roy, L.	"			800	"		40 00		760 00	800 00
Desroches, L.	"			775	"		38 75		736 25	775 00

LABORATORY BRANCH.

McGill, A.	Chief Analyst	1	A	3,700	For the year	74 00			3,626 00	3,700 00
Lemoine, A.	Analyst	1	B	2,275	"		113 75		2,161 25	2,275 00
Valin, J. G. A.	"	1	B	2,275	"		113 75	96 00	2,065 25	2,275 00
Forster, E. L. C.	"	1	B	2,275	"		113 75	57 40	2,103 85	2,275 00
Forward, C. C.	"	1	B	2,275	"		113 75		2,161 25	2,275 00
Dawson, J. A. MacD.	"	1	B	2,275	"		113 75	54 90	2,106 35	2,275 00
Kitto, W. V.	"	2	A	1,787	50 "		89 38		1,698 12	1,787 50
Kirwan, P. T.	"	2	B	1,300	Resigned off. from 1st June, 1916		11 26	10 80	202 94	225 00
Landry, A. J.	"	2	A	1,600	For the year		73 34		1,393 33	1,466 67
Collier, F. C.	"	2	A	1,600	"		80 00		1,520 00	1,600 00
Cook, S. J.	"	2	A	1,600	"		80 00		1,520 00	1,600 00
Davidson, W. A.	"	2	A	1,600	"		80 00		1,520 00	1,600 00
Westman, L. E.	"	2	A	1,600	"		46 69		886 62	933 31
Brot, Dr. M.	Asst. Analyst	2	B	1,300	From Sept. 1, 1916 to March 31, 1917				433 32	433 32
Rowat, R. M.	"	2	B	1,300	From Dec. 1, 1916 to March 31, 1917		21 67		411 66	433 33
Rickey, J. A.	Clerk	3	A	1,200	For the year		60 00	75 36	1,064 64	1,200 00
Wright, S. E.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Ladouceur, J.	"	3	A	1,200	"		60 00	75 12	1,064 88	1,200 00
Leckie, T. P.	"	3	B	800	"		40 00		760 00	800 00

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—*Continued.*

METHYLATED SPIRITS BRANCH.

Names.		Rank. Division.	Rank. Sub-Division.	Salary.	Period.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Insurance.	Amounts paid.	Total amounts paid.
				$		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Armstrong, W.	Supt. of Met. Spirits	1	B	2,400	For the year		120 00		2,280 00	2,400 00
Parent, F.	Clerk	3	A	1,200	"		60 00		1,140 00	1,200 00
Rioual, Y.	Warehouse man	L.	G	700	"		35 00		665 00	700 00
Cloutier, E.	"	L.	G	700	"		35 00		665 00	700 00
Dunn, J. F.	"	L.	G	600	"		30 00		570 00	600 00
ELECTRICAL BRANCH.										
Higman, O.	Chief Elect. Engin. & of Gas.	1	A	3,500	For the year		175 00		3,325 00	3,500 00
Lambe, A. B.	Assistant	1	B	2,700	"		135 00	70 20	2,494 80	2,700 00
Dupré, H. A.	Clerk	1	B	2,375	"		118 75	97 80	2,158 45	2,375 00
Rutledge, P. R.	"	2	A	1,650	"		82 50		1,567 50	1,650 00
Kinsman, E. A.	"	2	B	1,500	From Oct. 1, 1916 to March 1, 1917		31 25		593 75	625 00
Cole, N. R.	"	3	A	1,200	For the year		60 00		1,140 00	1,200 00
Mathews, E. D. K.	"	3	A	1,100	For the year less military pay		29 29		556 43	585 72
Griffith, M. L.	"	3	A	1,200	For the year		60 00		1,140 00	1,200 00
WEIGHTS AND MEASURES BRANCH.										
Way, E. O.	Chief Inspect. of W. and M.	1	A	3,000	For the year		150 00		2,850 00	3,000 00
Ostiguy, L. R.	Clerk	2	B	1,600	"		80 00		1,520 00	1,600 00
Watson, V. M.	"	3	A	1,200	"		60 00		1,140 00	1,200 00
Barbeau, L.	"	3	B	800	"		40 00		760 00	800 00
Burgess, T. H.	Carpenter			1,000	"		50 00		950 00	1,000 00
Chenier, E.	Clerk	L.	G	700	"		34 38		653 12	687 50
						494 86	4,833 93	1,214 07	128,889 11	135,431 97

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B—*Continued.*

Appendix B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917.

Names.	Services.	Amounts paid.	Total amounts paid.
		$ cts.	$ cts.
H. Cyr	Salary as extra clerk for the year	650 00	
J. R. Seguin	" " "	500 00	
J. P. Ethier	" from April 1st to Sept. 30th, 1916	250 00	
A. L. DeGuire	" " " " 1916	400 00	
P. A. Beaudet	" " " to July 31st, 1916	166 64	
E. Rooney	" " " to Aug. 31st, 1916	153 32	
R. Choquette	" " June 2nd to Dec. 1st., inc., 1916	250 00	
M. V. Brot	" " " 1st to Dec. 31st, 1916	325 01	
G. F. Brother	" " May 25th to Sept. 14th, 1916	396 39	
R. M. Rowat	" " Aug. 8th to Jan. 31st, 1917	408 85	
R. Brunet	" " " 23rd to Mar. 31st, 1917	485 97	
A. J. I. Ste. Marie	" " Oct. 2nd to Jan. 31st, 1917	165 29	
J. A. Gunton	" " Jan. 13th to Mar. 31st, 1917	283 05	
W. H. Hill	" " " to "	283 05	
G. E. Grattan	" " Jan. 15th to "	276 06	
O. G. Lye	" " Feb. 10th to "	181 83	
S. Mirsky	" " Jan. 8th to "	161 82	
L. Baulne	" " Sept. 26th to Jan. 7th, 1917	226 14	
M. V. Gordon	" " Feb. 15th to Mar. 31st, 1917	24 19	
			5,587 61
C. R. G. for King's Printer	Printing	2,645 32	
" "	Parliamentary publications	384 60	
" Cont. of Stationery	Stationery and books	4,255 60	
			7,285 52
C. P. R. Telegraph Co	Telegrams	393 83	
G. N. W. Telegraph Co	"	121 28	
			515 11
Patenaude, Hon. E. L	Travelling expenses	632 70	
Sevigny, Hon. A	"	300 00	
Vincent, J. U	"	129 99	
Catellier, C. L	"	772 90	
Taylor, G. W	"	55 25	
McGill, A	"	270 21	
Way, E. O	"	319 98	
Gallagher, M. F	"	300 00	
Higman, O	"	80 25	
Valin, A	"	13 70	
Lambe, A. B	"	212 58	
Danis, J. M	"	293 11	
Rutledge, P. R	"	74 20	
Rickey, J. A	"	343 85	
			3,798 72
The Bell Telephone Co. of Canada	Messages	591 55	
			591 55
Canadian Express Co	Cartage	3 10	
The Postmaster, Ottawa	Postage	230 00	
Bryson-Graham, Ltd	Goods, etc	54 77	
The Ottawa Electric Ry. Co	Car tickets	72 00	
The Gazette Printing Co., Ltd	Newspapers	1 48	
R. Robert	Washing towels	98 45	
O. Clairoux	Cartage	276 00	
Government Printing Bureau of Washington	Documents	0 77	
The Pritchard-Andrews Co., Ltd	Repairs to Stamps, etc	32 20	
The Ottawa Wine Vault Co	Distilled water	118 30	
The Ontario Hughes-Owens Co. Ltd	Furniture and apparatus	0 40	
Central Liberal Information Office	Documents	0 20	
The Ottawa Transfer Co	Cartage	0 50	
R. H. Pringle & Co	Brokerage	14 00	
Collector of Inland Revenue, Ottawa	War tax stamps	12 00	
The Ottawa Electric Co	Electric supplies	7 50	
G. H. Popham	Office supply	0 75	
Thornton & Truman	Repairs to locks and keys	15 60	

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—*Continued.*

Names.	Service.	Amounts paid.	Total amounts paid.
		$ cts.	$ cts.
W. J. Graham	War tax stamps	7 10	
Dominion Express Co	Express cartage	8 05	
Toronto Daily Star	Newspapers	0 25	
Hugh Carson Co	Repairs to kit	0 50	
The Plaunt Hardware Co	Hardware	1 35	
McIntosh & Watt	Glassware	1 00	
Le Droit	Newspapers	0 40	
Thos. Birkett & Son Co., Ltd	Hardware	0 55	
W. R. Law	Sundries	0 60	
The G.N.W. Telegraph Co. Mess. boys	Messages	6 50	
The C.P.R. Telegraph Co. mess. boys	"	7 50	
M. Landreville	Cartage	0 75	
The Tally-Ho-Pure Water Co., Ltd.	Distilled water	21 40	
The Evening Journal	Newspapers	0 24	
T. J. Moore & Co	1 Signature stamp		998 21
The Mercantile Agency, Toronto	Subscription	75 00	
The Times, Peterborough	"	6 46	
The Gazette, Montreal	"	3 00	
The Evening Citizen, Ottawa	"	3 35	
The Ottawa Free Press, Ottawa	"	1 80	
The Journal Printing Co. Ltd, Ottawa	"	1 85	
R. Lafontaine, Ottawa	"	58 26	
Le Canadien, Chatham, Ont	"	3 00	
Central Liberal Information Office, Ottawa	"	0 45	
The Daily Journal, Calgary	"	3 00	
The Citizen, Vancouver	"	1 00	
The Vancouver Daily Province, Vancouver	"	3 00	
The Colonist, Vancouver	"	5 00	
The Week, Victoria	"	2 00	
Le Manitoba, St. Boniface	"	1 00	
The North West Review, Winnipeg	"	1 00	
The Telegram, Winnipeg	"	3 00	
Les Cloches de St. Boniface, St. Boniface	"	1 00	
The World, Chatham, N.B	"	2 00	
L'Evangeline, Moncton, N.B	"	1 00	
The Globe, St. John, N.B	"	5 00	
Le Moniteur Acadien, Shediac, N.B.	"	1 00	
The Bridgewater Bulletin, Bridgewater, N.S	"	1 00	
The Herald, Halifax, N.S	"	7 50	
The Windsor Tribune, Windsor, N.S	"	1 00	
The Intelligencer, Belleville, Ont	"	3 00	
The Planet, Chatham, Ont	"	4 00	
The Guelph Herald, Guelph, Ont	"	4 00	
The Herald, Hamilton, Ont	"	3 60	
The Daily Spectator, Hamilton, Ont	"	3 00	
The Labour News, Hamilton, Ont	"	1 00	
The Farmers Advocate, London	"	1 50	
The Free Press, London	"	3 00	
The Evening Journal, Ottawa	"	14 40	
The United Canada, Ottawa	"	1 50	
The Standard, St. Catharine	"	3 00	
Saturday Night, Toronto	"	9 00	
The Toronto Daily Star, Toronto	"	5 00	
Globe Printing, Toronto	"	9 00	
Mail and Empire, Toronto	"	3 00	
The News, Toronto	"	7 50	

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—*Continued.*

Names.	Service.	Amounts paid.	Total amounts paid.
		$ cts.	$ cts.
The Canada Mining Journal, Toronto	Subscription	4 00	
The Daily World, Toronto	"	11 00	
The Catholic Register and Canadian Extension, Toronto	"	1 50	
The Evening Telegram, Toronto	"	3 00	
The Free Mason, Toronto	"	1 00	
Financial Post, Toronto	"	6 00	
The Express, Woodstock	"	1 00	
The Charlottetown Examiner, Charlottetown, P.E.I	"	2 50	
Bulletin des Recherches Historiques, Beauceville, Que	"	2 00	
Le Progrès du Saguenay, Chicoutimi	"	1 00	
L'Action Canadienne, Fraserville	"	1 00	
La Semaine, Grande Mere	"	1 00	
L'Etoile du Nord, Joliette	"	0 75	
La Presse, Montreal	"	14 25	
The Gazette, Montreal	"	27 00	
La Patrie, Montreal	"	7 75	
Herald Publishing Co., Montreal	"	6 00	
The Montreal Star, Montreal	"	6 00	
Le Devoir, Montreal	"	15 00	
Revue trimestrielle Canadienne, Montreal	"	4 00	
Le Pays, Montreal	"	3 00	
Le Nationaliste	"	4 00	
L'Action, Montreal	"	4 00	
Le Moniteur du Commerce, Montreal	"	2 00	
La Revue Canadienne, Montreal	"	6 00	
Le Peuple, Montmagny	"	1 00	
Printing Chronicle, Quebec	"	3 00	
Le Verite, Quebec	"	2 00	
L'Evenement, Quebec	"	3 00	
L'Action Sociale, Quebec	"	6 00	
La Nouvelle France, Quebec	"	3 00	
La Semaine Commerciale, Quebec	"	2 00	
La Societe de Geographie, Quebec	"	2 00	
Le Progres du Golfe, Rimouski	"	1 00	
L'Eveil, Sorel	"	1 00	
Le Sorelois, Sorel	"	1 00	
La Tribune, St. Hyacinthe	"	1 00	
Le Courrier de St. Hyacinthe, St. Hyacinthe	"	1 00	
Le Canada Français, St. John, Que	"	2 00	
Le Bien Public, Three Rivers	"	1 00	
Le Journal de Waterloo, Waterloo	"	1 00	
Le Patriote, Prince Albert, Sask	"	1 00	
Canada News Paper London, Eng	"	7 00	
Journal of Gas Lighting & Co., London, Eng	"	6 69	
La Banque Nationale, Paris, France	"	4,00	
American Food Journal, Chicago, U.S.A	"	2 50	
Scientific American, New York, U.S.A	"	9 25	
Tobacco World Publishing Co., Philadelphia, U.S.A	"	2 00	
Le Droit, Ottawa, Ont	"	6 00	
Le Canadien, Thetford Mines	"	1 00	
Le Canada, Montreal	"	5 50	
The Evening News, Montreal	"	1 00	
The Montreal Daily Mail, Montreal	"	3 00	
Le Reveil, Montreal	"	3 50	

APPENDIX B.—No. 5.—Details of Departmental Expenditures for the Year ended March 31, 1917—*Concluded.*

Names.	Service.	Amounts paid.	Total amounts paid.
		$ cts.	$ cts.
Le Naturaliste Canadien, Quebec	Subscription	3 00	
The Standard, Montreal	"	2 35	
The Sun, Vancouver	"	6 00	
The Journal Press, Ottawa	"	30 00	
Jones-Yarrell, London, Eng	"	18 12	
			550 83
	Total		19,327 55

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Belleville.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Diamond, F. D.	Salary as Inspector for the year	.....	.....	3 60	1,096 32	
Kylie, R.	" Asst. Inspector for the year	.....	.....	1 80	839 82	
Howson, G. H.	" " " "	.....	.....	1 80	839 82	
Worrell, Jas.	" " " "	.....	.....	1 80	839 82	
	Salaries	.....	.....	9 00	3,615 78	
	Contingencies	.....	.....	.....	2,108 71	5,724 49
	Hamilton.					
Sealey, J. C.	Salary as Inspector for the year	.....	.....	3 60	1,396 32	
Fitzgerald, E. W.	" Asst. Inspector for the year	.....	.....	1 80	998 16	
Wheatley, A. E.	" " " "	.....	.....	1 80	1,098 12	
Laidman, R. H.	" " " "	.....	.....	1 80	1,098 12	
Clegg, J.	" " " "	.....	.....	1 80	898 20	
Brick, J. H.	" " " "	.....	.....	1 80	898 16	
Von Newbronn, A.	" " " "	.....	.....	1 80	839 82	
Pryke, J.	" " " "	.....	.....	1 80	839 82	
	Salaries	.....	.....	16 20	8,166 72	
	Contingencies	.....	.....	.....	3,074 65	11,241 37
	Kingston.					
Gallagher, F.	Salary as Inspector for the year	.....	.....	3 60	1,196 40	
MacLean, C. E.	" Asst. Inspector for the year	.....	.....	1 50	840 12	
Davis, J. M.	" " " "	.....	.....	1 80	698 16	
	Salaries	.....	.....	6 90	2,734 68	
	Contingencies	.....	.....		351 19	3,085 87
	London.					
Hughes, R. A.	Salary as Inspector for the year	.....	.....	3 30	1,279 96	
Thomas, J. S.	" Asst. Inspector for the year	.....	.....	1 80	998 16	
Liddle, D.	" " " "	.....	.....	1 80	998 16	
Cada, T. A.	" " " "	.....	.....	1 80	839 82	
Webbe, S. A.	" " " "	.....	.....	1 80	839 82	
Porter, A.	" Asst. Inspector, resigned from May 21, 1916	.....	.....	0 30	107 27	
Marshall, F.	" " from Aug. 10, 1916 to Mar. 31, 1917	.....	.....	1 05	571 18	
	Salaries	.....	.....	11 85	5,634 37	
	Contingencies	.....	.....	.....	3,083 68	8,718 05
	Ottawa.					
Hinchey, E. H.	Salary as Inspector for the year	33 00	.....	3 60	1,613 40	
Breen, J.	" Asst. Inspector for the year	.....	.....	1 80	1,098 12	
Hodgins, G. C.	" " " "	.....	.....	1 80	839 82	
Church, G. C.	" " " "	.....	.....	1 80	731 46	
Trumpour, F. T. T.	" " " "	.....	.....	1 80	839 82	
Mattice, A. E.	" " " "	.....	.....	1 80	839 82	
Chenier, T.	" " " "	.....	.....	1 80	498 12	
Rowat, W.	" " " "	.....	.....	1 80	839 82	
McKay, E.	" Asst. Inspector, from Sept. 1 1916 to Mar. 31, 1917	.....	.....	1 05	465 57	
Montreuil, Z. A.	" from Sept. 1, 1916 to Mar. 31, 1917	.....	.....	1 05	523 95	

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917—*Continued.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Ethier, J. P.	Salary as Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917	.....	.....	1 05	523 95	
Couillard, J. E.	" Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917	.....	.....	1 05	523 95	
Blair, O. T.	" Asst. Inspector, from Sept. 1, 1917 to Mar. 31, 1917	.....	.....	1 05	523 95	
Sehppard, C. F.	" Asst. Inspector for the year	.....	.....	0 45	899 55	
		33 00	.....	21 90	10,761 30	15,036 34
	Contingencies	.....	.....	.....	4,275 04	
	Toronto.					
McConvey, J. J.	Salary as Inspector for the year	.....	.....	3 60	1,596 36	
Wright, R. J.	" Asst. Inspector for the year	.....	.....	1 80	1,174 20	
Smith, J. C.	" " "	.....	.....	1 80	1,198 20	
Cruickshank, E.	" " "	.....	.....	1 80	898 20	
Fallowdown, W. A.	" " "	.....	.....	1 80	998 16	
McEachern, C. A.	" " "	.....	.....	1 80	998 16	
Scarfe, W. S.	" " "	.....	.....	1 80	839 82	
Howe, F. E.	" " "	.....	.....	1 80	998 16	
	Salaries	.....	.....	16 20	8,701 26	
	Contingencies	.....	.....	.....	2,092 20	10,793 46
	Montreal.					
Archambault, J. E.	Salary as Inspector died Dec. 22, 1916	.....	.....	2 70	1,347 30	
Daoust, J. A.	" Asst. Inspector for the year	.....	.....	1 80	1,398 12	
Hebert, J. A.	" " "	.....	.....	1 80	1,398 12	
Boudet, E.	" " "	.....	.....	1 80	1,098 12	
Galipeau, J. B. N.	" " "	.....	.....	1 80	998 16	
Wilson, J. C.	" " "	.....	.....	1 80	998 16	
Belanger, S. F.	" " "	.....	.....	1 80	1,198 20	
Chapleau, J. R.	" " "	.....	.....	1 80	839 82	
Poitras, D.	" " "	.....	.....	1 80	798 12	
Boyd, W. R.	" " "	.....	.....	1 80	839 82	
Grignon, E. S.	" " "	.....	.....	1 80	839 82	
Gibault, A.	" " "	.....	.....	1 80	839 82	
Dostaler, A.	" Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917	.....	.....	1 05	507 25	
Bernard, A. A.	" Inspector from 9th to Mar. 31, 1917	.....	.....	0 22	111 07	
	Salaries	.....	.....	23 77	13,211 92	
	Contingencies	.....	.....	.....	6,146 75	19,358 67
	Quebec.					
Roy, C. E.	Salary as Inspector for the year	.....	.....	3 60	1,596 36	
LeBel, J. A.	" Asst. Inspector for the year	38 40	.....	1 80	1,059 72	
Knowles, C.	" " "	.....	.....	1 80	998 16	
Bourget, L. J.	" " "	.....	.....	1 80	998 16	
Beauchamp, L. E.	" " "	.....	.....	1 80	598 20	
Bernatchez, A.	" " "	.....	.....	1 80	598 20	
Duchesne, N.	" " "	.....	.....	1 80	598 20	
Couture, C. H.	" " "	.....	87 60	1 80	510 60	
Lortie, J. A.	" " "	.....	.....	1 80	748 20	

APPENDIX B.— No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Deductions for.			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	Quebec—Con.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dagneau, J. T.	Salary as Asst. Inspector for the year	.....	.....	1 80	448 20	
Hudon, P. E.	" " "	.....	.....	1 80	298 20	
Prefontaine, F. H.	" " "	.....	.....	1 80	798 12	
	Salaries	38 40	87 60	23 40	9,250 32	
	Contingencies	.....	.....	.....	7,358 40	16,608 72
	Sherbrooke.					
Delorme, O. C.	Salary as Inspector for the year	.....	.....	3 60	1,296 36	
Lamy, C.	" Asst. Inspector for the year	.....	.....	1 80	839 82	
Lemire, J. N.	" " "	.....	77 40	1 80	762 42	
	Salaries	.....	77 40	7 20	2,898 60	
	Contingencies	.....	.....	.....	2,193 50	5,092 10
	St. Hyacinthe.					
Morin, J. P.	Salary as Inspector for the year	.....	.....	3 60	1,296 36	
Champagne, J. A.	" Asst. Inspector for the year	.....	.....	1 80	898 20	
	Salaries	.....	.....	5 40	2,194 56	
	Contingencies	.....	.....	.....	1,784 04	3,978 60
	Three Rivers.					
Lessard, A.	Salary as Inspector for the year	.....	.....	3 60	996 36	
Bolduc, E.	" Asst. Inspector, from April 1, 1916 to July 31, 1917	.....	.....	0 60	260 72	
Carette, E.	" Asst. Inspector for the year	.....	.....	1 80	839 82	
Dubord, E.	" " "	.....	.....	1 80	839 82	
Massicotte, A. N.	" Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917	.....	.....	1 05	498 93	
	Salaries	.....	.....	8 85	3,435 65	
	Contingencies	.....	.....	.....	1,403 19	4,838 84
	St. John.					
Barry, Jas.	Salary as Inspector for the year	.....	.....	3 60	1,496 40	
Bernier, J. A.	" Asst. Inspector for the year	.....	.....	1 80	898 20	
White, H. E.	" " "	.....	.....	1 80	948 12	
Leblanc, J. D.	" " "	.....	.....	1 80	839 82	
Limerick, A. K.	" " "	.....	.....	1 80	723 20	
	Salaries	.....	.....	10 80	4,905 74	
	Contingencies	.....	.....	.....	1,072 48	5,978 22
	Halifax.					
O'Brien, W.	Salary as Inspector for the year	.....	.....	3 60	1,096 32	
Waugh, R. J.	" Asst. Inspector for the year	.....	.....	1 80	781 51	
	Salaries	.....	.....	5 40	1,877 83	
	Contingencies	.....	.....	.....	2,272 62	4,150 45

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Deductions for.			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	Pictou.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dustan, Wm.	Salary as Inspector for the year			3 60	1,368 36	
Chisholm, J. J.	" Asst. Inspector for the year			1 80	998 16	
Campbell, D. A.	" " "			1 80	939 82	
	Salaries			7 20	3,206 34	
	Contingencies				817 97	4,024 31
	Charlottetown.					
Davy, Edmond	Salary as Inspector for the year			3 60	1,096 32	
	Contingencies				329 10	1,425 42
	Winnipeg.					
McKay, R.	Salary as Inspector for the year			3 60	1,196 40	
Gilby, W. F.	" Asst. Inspector for the year			1 80	898 20	
Spicer, H.	" " "			1 80	898 20	
Grant, C. D.	" " "			1 80	898 20	
Field, W. J.	" " "			1 80	839 82	
McKay, J.	" " "			1 80	839 82	
Attridge, J. B.	" " "			1 80	839 82	
Harper, Sam.	" " "			3 60	1,396 32	
	Salaries			18 00	7,806 78	
	Contingencies				6,449 69	14,256 47
	Calgary.					
Costello, W.	Salary as Inspector for the year	31 92		3 60	1,564 44	
Gibson, C.	" Asst. Inspector for the year			0 30	899 70	
Fyfe, G. D.	" " "			3 60	1,796 40	
Kirkham, T. E.	" Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917			1 05	473 91	
	Salaries	31 92		8 55	4,734 45	
	Contingencies				2,904 57	7,639 02
	Saskatoon.					
Johnston, C. W.	Salary as Ipspector for the year			3 60	1,596 36	
Welsh, W. R.	" Asst. Inspector for the year			0 30	999 66	
Wallace, R.	" " "			1 80	898 20	
Courtenay, W. N.	" " "			3 60	1,396 32	
Fleming, T. H.	" Asst. Inspector, from Sept. 1, 1916 to Mar. 31, 1917			1 05	490 59	
	Salaries			10 35	5,381 13	
	Contingencies				6,680 21	12,061 34
	Edmonton.					
McDougall, J. C.	Salary as Inspector for the year			3 45	1,196 55	
	Contingencies				2,589 23	
						3,785 78

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.—*Concluded.*

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Vancouver.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Dutton, A. H.	Salary as Inspector for the year			3 60	1,196 40	
Harris, W. H.	" Asst. Inspector for the year			1 80	812 85	
Shaw, J.	" " "			1 80	348 12	
	Salaries			7 20	2,357 37	
	Contingencies				668 00	3,025 37
	Nelson.					
Parker, Thos.	Salary as Inspector for the year			3 60	1,246 32	
Williamson, C. F.	" Asst, Inspector, from Sept. 1, 1916 to Mar. 31, 1917			1 05	465 57	
	Salaries			4 65	1,711 89	
	Contingencies				2,528 75	4,240 64
	Regina.					
McLean, D. J.	Salary as Inspector for the year			3 60	1,496 40	
Suttie, F. C.	" Asst. Inspector for the year			3 60	1,396 32	
	Salaries			7 20	2,892 72	
	Contingencies				7,363 30	10,256 02
	Grain Elevator Scale Inspector.					
Bowen, A. A.	Salary as Inspector, from Sept. 19, 1916 to March 31, 1917				298 63	
	Contingencies				45 68	344 31
	Inspector of Weights and Measures for Grain Elevator.					
White, J. G.	Salary as Inspector, from Oct. 5, 1916 to Mar. 31, 1917				244 58	244 58
	Contingencies					
	Yukon.					
Stingle, J. W.	Salary as Inspector for the year			3 60	996 36	
	Contingencies				14 00	1,010 36
	Chief Inspector.					
Way, E. O.	Contingencies					220 02
						177,138 82

RECAPITULATION.

Salaries	$ 109,951 11
Contingencies	67,187 71
	$ 177,138 82

See Statement No. 19A.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the Year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Weights and measures Provisional Allowance.	$ cts.	$ cts.
McKay, R., Winnipeg	To pay McKay, R.	135 33	
"	" Gilby, W. F.	162 50	
"	" Spicer, H.	162 50	
"	" Grant, C. D.	162 50	
"	" Attridge, J. B.	162 50	
"	" Field, W. J.	162 50	
"	" McKay, J.	162 50	
"	" Harper, S.	135 33	
"	" Sparling, E. J.	111 60	
			1,357 26
Costello J. W., Calgary	" Kirkham, T. E.	150 00	
"	" Fyfe, G. D.	100 00	
"	" Gibson, C. L.	150 00	
"	" Costello, J. W.	100 00	
"	" Green, W.	62 50	
"	" Tozer, D. H. A.	11 18	
"	" Furmston, S. C.	30 64	
			604 32
McDougall, J. C., Edmonton	" McDougall, J. C.	125 00	
"	" Farrell, W. G.	112 50	
"	" McLeod, J.	108 87	
			346 37
McLean, D. J., Regina	" McLean, D. J.	99 96	
"	" Shaw, A. I.	150 00	
"	" Suttie, T. C.	124 92	
"	" Eadie, Jas.	150 00	
"	" Goth, J. A.	70 83	
"	" McDonagh, J. A.	145 83	
"	" Armstrong, G.	71 37	
"	" Milligan, J. A.	71 37	
"	" Lorimer, E. B.	15 62	
			899 90
Johnston, C. W., Saskatoon	" Welch, W. R.	150 00	
"	" Wallace, R.	150 00	
"	" Greig, J. T.	150 00	
"	" Fleming, T. H.	150 00	
"	" Courtenay, W. N.	124 92	
"	" Johnston, C. W.	99 96	
"	" Jobb, Wm.	58 87	
"	" Croucher, R. A.	48 79	
			932 54
Parker, Thos., Nelson	" Parker, Thos.	124 92	
"	" Williamson, C. F.	150 00	
			274 92
Dutton, A. H., Vancouver	" Dutton, A. H.	124 92	
"	" Harris, W. H.	150 00	
			274 92
	Total Provisional Allowance		4,690 23

APPENDIX B.—No. 6.—Details of Weights and Measures Expenditures for the year ended March 31, 1917.—*Concluded.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	General Weights and Measures Contingencies.	$ cts.	$ cts.
Hughes, P. A.	Petty expenses	20 04	
Dufresne, Mrs. A.	Salary as charwomen	313 00	
The Pritchard- Andrews Co.	Rubber stamps repaired	153 86	
The Ottawa Electric Co.	Electric current	75 00	
Thos. Birkett & Son Co., Ltd.	Hardware supplies	53 43	
Collector of Customs	Duty on goods	26 28	
The Canadian-Fairbanks-Morse Co	Steele portable kits	620 00	
Bryson-Graham, Ltd	Goods supplies	15 00	
The Plaunt Hardware Co.	24 dry batteries	7 20	
Modern Machine	Casters for aluminium kit box	33 20	
Bank of Montreal	To purchase draft favor H. J. Astle	8 15	
	Law Costs.		
Mortley, L. Bell	Rex *vs.* Cypress Lumber	40 00	
Munro, H. H.	" Wilson Pyper	15 00	
Baird, W. J.	" T. W. Griffin	9 10	
Thurston & Co.	" D. McKinley	20 00	
			1,409 26

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the Year ended March 31, 1917.

To whom paid.	Service.	Deductions for Superannuation.	Deductions for Retirement.	Deductions for Guarantee.	Amounts paid.	Total amounts paid.
	Belleville.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Fraser, H.	Contingencies				1,268 46	1,268 46
	Hamilton.					
Lutz, H.	Salary as Inspector for the year			3 60	1,496 40	
Lovell, E.	" Asst. Inspector for the year			1 80	998 16	
Smith, W. A.	" " "			1 80	998 16	
Powell, J. B.	" " "			1 80	298 20	
Mutchmor, R. W.	" " , from Nov. 1, 1916 to Mar. 31, 1917			0 75	415 90	
				9 75	4,206 82	
	Contingencies				1,538 49	5,745 31
	London.					
Nash, A. F.	Salary as Inspector for the year			3 60	1,796 40	
Elliot, G. F.	" Asst. Inspector for the year			0 30	999 66	
Willis, J.	" " "			1 80	931 52	
Trasher, W. A.	" " "			1 80	198 12	
Rennie, Geo.	" " "			1 80	198 12	
Orr, H. N.	" " "			0 30	199 62	
Skelton, A. R.	" " "			0 30	170 06	
Gray, F. W.	" " , from Nov. 1, 1916 to Mar. 31, 1917			0 75	415 90	
				10 65	4,909 40	
	Contingencies				1,278 40	6,187 80
	Ottawa.					
Chevrier, R. J.	Salary as Asst. Inspector for the year			1 80	998 16	
Roche, W. J.	" " "			0 30	1,099 62	
Bond, M. B.	" " "			2 88	1,097 04	
Morrison, A. C.	" Inspector, from April 1 to Dec. 31, 1916			2 70	1,047 24	
Kinsman, E. A.	" " Mar. 1 to Mar. 31, 1917			0 30	124 70	
				7 98	4,366 76	
	Contingencies				2,938 83	7,305 59
	Toronto.					
Stiver, J. L.	Salary as Inspector for the year		90 00	3 60	1,706 40	
Pape, J.	" Asst. Inspector for the year			1 80	1,448 16	
Reesor, M. W.	" " "			1 80	1,298 16	
Renahan, M. J.	" " "			1 80	998 16	
Ogden, G. J.	" " "			1 80	948 12	
Clark, H. M.	" " "			1 80	998 16	
Johnstone, S. G.	" " "			1 80	998 16	
Wilson, H. H.	" " "			1 80	998 16	
Hacker, A. H.	" " "			1 80	798 12	
Shanacy, M.	" " "	1 92		1 80	96 24	
Broadfoot, S.	" " "	6 00		1 80	292 20	
Graham, W. J.	" " "			1 80	198 12	
		7 92	90 00	23 40	10,778 16	
	Contingencies				778 36	11,556 52

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the Year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Deductions for			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	Montreal.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Aubin, A.	Salary as Inspector for the year			3 60	1,996 32	
OFlaherty, M. J.	" Asst. Inspector for the year			1 80	1,198 20	
Aubin, C.	" " "			2 88	1,297 08	
Mann, Wm.	" " "			2 88	1,197 12	
Blandford, E. B.	" " "			1 80	1,198 20	
Clayton, J. W.	" " "			1 80	998 16	
Brunet, J.	" " , from Feb. 1 to Mar. 31, 1917			0 15	199 85	
				14 91	8,084 93	
	Contingencies				772 83	
						8,857 76
	Quebec.					
Beland, F. X. W. E.	Salary as Inspector for the year			3 60	496 32	
Cantin, J. A.	" , from Feb. 1, to Mar. 31, 1917			0 60	266 06	
				4 20	762 38	762 38
	Sherbrooke.					
Simpson, A. F.	Salary as Inspector for the year	3 96		3 60	192 36	
Bowen, F. C.	" Asst. Inspector for the year			0 30	299 70	
		3 96		3 90	492 06	
						492 06
	Fredericton.					
Wilson, J. E.	Salary as Inspector for the year			1 80	98 16	
						98 16
	St. John.					
Wilson, J. E.	Salary as Inspector for the year			3 60	1,396 32	
Ganter, E. L.	" Asst. Inspector for the year			1 80	998 16	
				5 40	2,394 48	
	Contingencies				322 65	
						2,717 13
	Halifax.					
Toale, J.	Salary as Inspector for the year			3 60	1,296 36	
Withers, S. W.	" Ass. Inspector for the year			1 80	998 16	
Munro, H. D.	" " "	1 92		1 80	96 24	
		1 92		7 20	2,390 76	
	Contingencies				544 61	2,935 37
	Charlottetown.					
Bell, J. H.	Salary as Inspector for the year			3 60	496 32	
						496 32
	Winnipeg.					
Hamilton, R.	Salary as Inspector for the year			3 60	1,646 40	
Babington, F. C.	" Asst. Inspector for the year			1 80	1,198 20	
Ross, W. A.	" " "			1 80	898 20	
Weber, L.	" " "			0 30	1,099 62	
Pankhurst, G. T.	" " "			1 80	998 16	
Hood, H.	" " "			0 30	899 70	
				9 60	6,740 28	
						6,740 28

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the Year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Deductions for			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
	Calgary.					
Hall, W. P.	Contingencies				656 16	656 16
	Vancouver.					
Stott, J.	Contingencies				4 10	4 10
	Victoria.					
Dresser, T.	Salary as Inspector for the year			3 60	1,396 32	
Shaw, J.	Salary as Asst. Inspector for the year			1 80	98 16	
				5 40	1,494 48	
	Contingencies				38 31	1,532 79
	Chief Inspector.					
Higman, O.	Contingencies				17 37	17 37
	Inspector of Western Dominion.					
Higman, jr., O.	Contingencies				337 56	337 56
						57,711 12

RECAPITULATION.

Salaries	$ 47,426 58
Contingencies	10,284 54
	$ 57,711 12

See Statement No. 21.

SESSIONAL PAPER No. 12

APPENDIX B.—No. 7.—Details of Gas Inspection Expenditures for the year ended March 31, 1917.—*Concluded.*

To whom paid.	Service.	Amounts paid	Total amounts paid
	General Gas Contingencies.	$ cts.	$ cts.
The Pritchard-Andrews Co...	Stamps repaired	39 18	
Collector of Customs	Duty paid on goods	11 25	
Pringle, R. H. Co	Express charges	1 20	
Canadian Consolidated Rubber Co	Rubber supplies	140 39	
Bank of Montreal	To purchase draft	30 10	
Clements, E. N	Law costs Rex *vs.* Yarmouth Fuel Gas Co	10 00	
Sawers, C. W	" " Vancouver Gas Co	66 50	
Clements, E. U	" Violation	17 50	
			316 12
	Printing	1,725 18	
	Stationery	1,772 11	
			3,497 29
			3,813 41

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

Appendix B.—No. 8.—Details of Gas and Electric Light Expenditures for the Year ended March 31, 1917.

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	Gas and Electric Light Provisional Allowance.	$ cts.	$ cts.
Hamilton, R., Winnipeg	To pay Hamilton, R.	99 96	
"	" Babington, F. C.	124 92	
"	" Pankhurst, G. T.	124 92	
"	" Ross, W. A.	150 00	
"	" Hood, H.	150 00	
"	" Weber, L.	124 92	
			774 72
Kyle, W. P., Calgary	" Kyle, W. P.	100 00	
"	" Jackson, R. C.	150 00	
			250 00
Cantin, A. J., Edmonton	" Cantin, A. J.	125 00	
			125 00
Hunter, W. M., Regina	" Hunter, W. M.	62 40	
"	" Hart, S. N.	124 80	
			187 20
Stott, Jas., Vancouver	" Stott, J.	99 96	
"	" Templeton, W. A.	124 92	
"	" Power, O. S.	124 92	
"	" Scouler, G. T.	124 92	
"	" McNiven, J. J.	124 92	
"	" de la Mare, E.	124 92	
"	" Costello, E. R.	99 96	
			824 52
Dresser, F., Victoria	" Dresser, F.	125 00	
			125 00
	Total Provisional Allowance		2,286 44

APPENDIX B.—No. 8.—Details of General Electric Light Expenditures for the year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Amounts paid.	Total amounts paid.
	General Electric Light Contingencies.	$ cts.	$ cts.
The Ottawa Electric Co.	Electric current	187 50	
Smith, Miss Irene	Salary as charwoman	313 00	
Rankin, W.	Supplies for Ottawa Laboratory	17 50	
Pringle, R. H.	Electrical apparatus	13 05	
Standard Underground Cable Co.	Testing meters for Laboratory	33 86	
Thornton & Truman	Supplies for boxes	6 00	
Canadian Westinghouse Co.	Testing meters for Laboratory	722 92	
Collector of Customs	Duty on goods	464 13	
Bank of Montreal	To purchase draft	1,899 76	
			3,657 72
	Printing	236 56	
	Stationery	45 80	
			282 36
			3,940 08

APPENDIX B.—No. 8.—Details of Electric Light Inspection Expenditures for the Year ended March 31, 1917.—*Continued.*

To whom paid.	Service.	Deductions for			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	Belleville.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Fraser, H.	Salary as Inspector for the year	.....	.....	7 20	1,092 72	
Diamond, F. D.	" Asst. Inspector for the year	.....	.....	1 80	298 20	
Bickle, J. W.	" " "	1 92	.....	1 80	96 24	
	Salaries	1 92	.....	10 80	1,487 16	
	Contingencies	.....	.....	.....	1,373 27	2,860 43
	Fort William.					
Little, E.	Salary as Inspector for the year	.....	.....	3 60	1,396 32	
	Contingencies	.....	.....	.....	356 53	1,752 85
	Hamilton.					
Lutz, H.	Contingencies	.....	.....	.....	462 00	462 00
	London.					
Nash, A. F.	Contingencies	.....	.....	.....	829 02	829 02
	Ottawa.					
Kinsman, E. A.	Contingencies	.....	.....	.....	224 00	224 00
	Sudbury.					
Code, A. G.	Salary as Inspector from April 1 to May 13, 1916	.....	.....	0 41	115 17	
	Contingencies	.....	.....	.....	1,649 58	1,764 75
	Toronto.					
Stiver, J. L.	Contingencies	.....	.....	.....	783 90	783 90
	Montreal.					
Aubin, A.	Contingencies	.....	.....	.....	2,675 98	2,675 98
	Quebec.					
Cantin, J. A.	Contingencies	.....	.....	.....	3,399 30	3,399 30
	Sherbrooke.					
Simpson, A. F.	Contingencies	.....	.....	.....	227 85	227 85
	Three Rivers.					
Oliver, A.	Salary as Inspector for the year	.....	.....	3 60	496 32	
	Contingencies	.....	.....	.....	478 65	974 97
	St. John.					
Wilson, J. E.	Contingencies	.....	.....	.....	355 01	355 01
	Halifax.					
Toale, J.	Contingencies	.....	.....	.....	1,330 17	1,330 17
	Charlottetown.					
Bell, J. H.	Contingencies	.....	.....	.....	147 76	147 7

APPENDIX B.—No. 8.—Details of Electric Light Inspection Expenditures for the Year ended March 31, 1917.—*Concluded.*

To whom paid.	Service.	Deductions for			Amounts paid.	Total amounts paid.
		Superannuation.	Retirement.	Guarantee.		
	Winnipeg.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Hamilton, R.	Contingencies				841 30	841 30
	Calgary.					
Kyle, W. P.	Salary as Inspector for the year			3 60	1,496 40	
	Contingencies				903 28	2,399 68
	Edmonton.					
Cantin, A. J.	Salary as Inspector for the year			3 60	1,296 36	
	Contingencies				400 25	1,696 61
	Regina.					
Hunter, W. M.	Salary as Inspector for the year			1 98	1,098 08	
Hart, S. N.	" Asst. Inspector for the year			1 80	1,198 20	
	Salaries			3 78	2,296 28	
	Contingencies				1,318 10	3,614 38
	Vancouver.					
Stott, Jas.	Salary as Inspector for the year			3 60	1,796 40	
Templeton, W. A.	" Asst. Inspector for the year			3 60	1,246 32	
Power, O. S.	" " "			0 36	627 26	
Scouler, G. T.	" " "			1 80	1,198 20	
McNiven, J. J.	" " "			1 80	998 16	
Wolfenden, WM.	" " "		9 96	1 80	188 16	
de la Mara, E.	" " "			1 80	998 16	
	Salaries		9 96	14 76	7,052 66	
	Contingencies				1,475 52	8,528 18
	Victoria.					
Dresser, F.	Contingencies				305 69	305 69
	Yukon.					
Stingle, J. W.	Salary as Inspector for the year			3 60	496 32	496 32
Kinsman, E. A.	Salary as Inspector from April 1 to Oct. 1, 1917			0 90	749 10	749 10
	Chief Electrical Engineer.					
Higman, sr. O.	Contingencies				574 60	574 60
	Inspector of Western Dominion.					
Higman, Jr., O.	Salary as Inspector for the year			3 60	2,596 32	
	Contingencies				602 02	3,198 34
						40,192 19

RECAPITULATION.

Salaries	$19,542 54
Contingencies	20,649 65
	$40,192 19

See Statement No. 23.

APPENDIX B.—No. 9—Showing the Amount paid during the Year 1916–17 to different Companies for guaranteeing Outside Officers of the Inland Revenue Department.

—	Amounts paid.
	$ cts.
Railway Passenger Assurance Co.	198 21
The Imperial Guarantee and Accident Insurance Co. of Canada	543 04
The Dominion of Canada Guarantee and Accident Insurance Co.	392 77
The Guarantee Co. of North America	517 21
London Guarantee and Accident Co.	165 49
The Employers Liability Assurance Corporation, Ltd.	435 09
Total	2,251 81

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B—*Continued.*

No. 10.—Statement showing the number of parties under Licenses for the Year 1916-17.

Divisions.	Distillers.	Brewers and Malsters.	Brewers.	Malsters.	Tobacco Manufacturers.	Cigar Manufacturers.	Bonded Warehouses.	Manufacturers in Bond (Vinegar).	Chemical Stills.	Manufacturers of Stills.	Acetic Acid Manufacturers.	Mfrs. of Pharmaceutical Prep's.	Manufacturers of Perfumes.	Petroleum Refiners.	Wood Alcohol Manufacturers.	Manufacturers in Bond (Sundries).	Malt Vinegar Brewers.	Manufacturers in Bond (Explosives).	Rectifiers.	Mfrs. in Bond (Vinegar) Distillers.
Belleville (H. Corby Distillery Co., Ltd.)	1	..	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Brantford	..	..	1	..	..	4	2	1	..	..	..	..	..	..	..	..	..	..	..	..
Guelph (Jos. E. Seagram)	1	2	4	2	..	9	1	..	..	..	..	..	..	..	..	1	..	..	..	..
Hamilton (Hamilton Distillery Co., Ltd.)	1	1	1	1	1	9	6	2	4	..	1	..	..	..	..	1	..	..	..	..
Kingston	..	..	2	..	..	3	1	1	2	..	..	1	..	..	..	..	..	..	..	..
London	..	2	2	..	..	31	8	..	4	..	..	..	..	3	..	..	..	..	..	..
Ottawa	..	..	2	..	..	..	7	..	3	..	..	..	..	..	1	..	..	..	..	..
Owen Sound	..	..	4	..	..	1	1	1	..	..	..	..	..	..	1	..	..	..	..	..
Perth (Spalding & Stewart, John A. McClaren Estate, British Chemical Co., Ltd)	3	..	1	..	..	..	10	..	3	..	..	1	1	..	..	2	..	1	..	..
Peterborough	..	..	1	..	..	2	3	..	1	..	..	..	..	..	1	..	..	..	..	..
Port Arthur	..	..	3	..	..	..	10	..	1	..	..	..	..	..	..	..	..	..	..	..
Prescott (J. P. Wiser & Son, Ltd.)	1	..	2	..	..	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..
St. Catharines	..	..	2	..	..	8	1	..	2	..	..	..	..	..	..	..	..	..	..	..
Stratford	..	..	2	..	..	4	2	..	..	..	..	..	1	..	..	..	..	..	..	..
Toronto (Gooderham & Worts, Ltd., General Distilling Co., Ltd.)	2	..	4	..	3	20	12	2	29	3	..	5	5	2	4	4	1	1	1	..
Windsor (Hiram Walker & Sons, Ltd.)	1	..	2	1	5	7	4	1	4	..	..	3	4	..	..	1	..	..	..	1
Ontario	10	8	34	4	9	101	71	8	53	3	1	10	11	5	7	10	1	2	1	1
Joliette (The Melchers Gin & Spirits Distillery Co., Ltd.)	1	..	..	..	6	8	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Montreal (The Montreal Products Co., Ltd., & Canadian Explosives, Ltd.)	2	1	5	1	41	39	25	2	18	..	1	3	8	..	2	3	..	1	..	..
Quebec	..	..	2	..	5	2	13	2	..	..	..	..	1	..	..	..	..	..	..	..
St. Hyacinthe (The St. Hyacinthe Distillery Co., Ltd.)	1	..	..	..	5	9	6	..	..	..	..	..	..	..	..	..	..	1	1	..
Sherbrooke	..	..	1	..	1	7	5	..	..	..	..	..	..	..	2	1	..	..	..	..
Three Rivers	..	..	1	..	3	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Quebec	4	1	9	1	61	69	50	4	18	..	1	3	9	..	4	4	..	2	1	..
St. John, New Brunswick	..	..	2	..	..	2	7	1	1	..	..	..	..	..	..	..	..	..	..	..
Halifax	..	..	3	..	..	3	6	..	1	..	..	..	..	..	..	..	..	..	..	..
Pictou	..	..	..	..	2	1	5	..	1	..	..	..	..	..	..	..	..	..	..	..
Nova Scotia	..	..	3	..	2	4	11	..	2	..	..	..	..	..	..	..	..	..	..	..
Charlottetown, Prince Edward Island	..	..	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Winnipeg, Manitoba	..	1	7	2	2	10	32	2	12	..	..	2	2	..	..	3	..	..	..	..
Moose Jaw, Saskatchewan	..	..	4	..	..	1	7	..	3	..	..	..	..	1	..	..	..	..	..	..
Calgary, Alberta	..	..	7	1	1	9	15	2	11	..	..	..	..	3	..	..	..	..	..	..
Vancouver	1	..	18	..	1	15	27	1	13	..	..	..	..	1	..	..	1	..	..	..
Victoria	..	..	6	..	..	9	6	..	3	..	..	..	..	..	..	..	..	..	..	..
British Columbia	1	..	24	..	1	24	33	1	16	..	..	..	..	1	..	..	1	..	..	..
Dawson, Yukon	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Grand Total	15	10	91	8	82	220	228	18	116	3	2	15	22	10	11	17	2	4	2	1

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B.—No. 11—Summary Statement showing the number of permanent officers employed in the different services of the Inland Revenue Department during the year ended March 31, 1917.

DEPARTMENT OF OTTAWA.

—	Dead.	Superannuated.	Part of year.	Full year.	Number of Officers employed.
Inside Service	2	.....	8	74	84

EXCISE (Outside Service).

Districts.	Provinces.	Dead.	Superannuated.	Part of year.	Full year.	Number of Officers employed.
Belleville	Ontario	1	.....	2	10	13
Brantford	"	.....	.....	.....	6	6
Guelph	"	.....	2	.....	13	15
Hamilton	"	1	.....	1	17	19
Kingston	"	1	.....	.....	6	7
London	"	1	.....	.....	18	19
Ottawa	"	.....	.....	1	8	9
Owen Sound	"	.....	.....	.....	5	5
Perth	"	.....	.....	1	13	14
Peterborough	"	.....	.....	1	3	4
Port Arthur	"	.....	.....	.....	3	3
Prescott	"	.....	.....	.....	10	10
St. Catharines	"	.....	.....	.....	5	5
Stratford	"	.....	.....	.....	6	6
Toronto	"	1	.....	.....	37	38
Windsor	"	.....	1	1	24	26
Joliette	Quebec	.....	.....	.....	10	10
Montreal	"	1	.....	2	47	50
Quebec	"	.....	.....	.....	16	16
St. Hyacinthe	"	.....	.....	.....	6	6
Sherbrooke	"	.....	.....	.....	8	8
Three Rivers	"	.....	.....	.....	1	1
St. John	New Brunswick	.....	.....	.....	11	11
Halifax	Nova Scotia	.....	.....	.....	9	9
Pictou	"	.....	.....	.....	3	3
Charlottetown	Prince Edward Island	.....	.....	.....	2	2
Winnipeg	Manitoba	.....	.....	2	16	18
Calgary	Alberta	.....	.....	.....	6	6
Moose Jaw	Saskatchewan	.....	.....	2	5	7
Vancouver	British Columbia	3	.....	1	16	20
Victoria	"	.....	.....	.....	8	8
Dawson	Yukon Territory	.....	.....	.....	1	1

District Inspectors.

Dominion Inspector of Inland Revenue Department and Dominion Preventive officer	.....	.....	.....	.....	1	1
District Inspector and Inspector of Bonded Factories	Ontario	.....	.....	.....	1	1
District Inspectors	"	.....	.....	.....	2	2
" "	Quebec	.....	.....	.....	2	2
" "	New Brunswick	.....	.....	.....	1	1
" "	Manitoba	.....	.....	.....	1	1
" "	Alberta	.....	.....	.....	1	1
" "	British Columbia	.....	.....	.....	1	1
Inspector of Distilleries	Dominion	.....	.....	.....	1	1
Dominion Inspector of Malt Houses and Breweries	"	.....	.....	.....	1	1
	Grand total for Excise	9	3	14	361	387

SESSIONAL PAPER No. 12

APPENDIX B—*Continued.*

No. 11.—Summary statement showing the number of permanent officers—*Con.*

EXCISE PREVENTIVE (Outside Service).

Divisions.	Provinces.	Dead.	Part of year.	Full year.	Number of Officers employed.
Brantford	Ontario			1	1
Hamilton	"		2		2
London	"			2	2
Ottawa	"		2	8	10
Toronto	"			1	1
Windsor	"		1	1	2
Joliette	Quebec		1	3	4
Montreal	"	1	3	23	27
Quebec	"		3	9	12
Sherbrooke	"			1	1
St. Hyacinthe	"		1	6	7
Three Rivers	"			3	3
St. John	New Brunswick			1	1
Halifax	Nova Scotia			1	1
Charlottetown	Prince Edward Island		1		1
Winnipeg	Manitoba		1	3	4
Moose Jaw	Saskatchewan		1		1
Calgary	Alberta			3	3
Vancouver	British Columbia			3	3
WEIGHTS AND MEASURES PREVENTIVE (Outside Service).					
Kingston	Ontario			1	1
Ottawa	"		1	3	4
Montreal	Quebec		1	1	2
St. Hyacinthe	"			2	2
Halifax	Nova Scotia			1	1
Charlottetown	Prince Edward Island			1	1
Winnipeg	Manitoba		1		1
Calgary	Alberta		1		1
Edmonton	"		1	1	2
Regina	Saskatchewan			3	3
Saskatoon	"			1	1
	Grand total for Preventive Service	1	21	83	105

APPENDIX B—*Continued.*

No. 11.—Summary statement showing the number of permanent officers—*Con.*

ADULTERATION OF FOOD (Outside Service).

Divisions.	Provinces.	Dead.	Part of year.	Full year.	Number of Officers employed.
Kingston	Ontario			1	1
London	"			1	1
Ottawa	"		1		1
Toronto	"			1	1
Montreal	Quebec			2	2
Quebec	"			1	1
St. Hyacinthe	"			1	1
St. John	New Brunswick			1	1
Halifax	Nova Scotia			1	1
Cape Breton	"			1	1
Charlottetown	Prince Edward Island		1		1
Calgary	Alberta			1	1
North Battleford	Saskatchewan		1		1
Nelson	British Columbia			1	1
Vancouver	"			1	1
Victoria	"		1		1
	Grand total for Adulteration of Food		4	13	17

WEIGHTS AND MEASURES (Outside Service).

Districts.	Provinces.	Dead.	Superannuated.	Part of year.	Full year.	Number of Officers employed.
Belleville	Ontario				4	4
Hamilton	"				8	8
Kingston	"				3	3
London	"		1	1	5	7
Ottawa	"			5	9	14
Toronto	"				8	8
Montreal	Quebec	1		2	11	14
Quebec	"				12	11
Sherbrooke	"				3	3
St. Hyacinthe	"				2	2
Three Rivers	"			2	3	5
St. John	New Brunswick				5	5
Halifax	Nova Scotia				2	2
Pictou	"				3	3
Charlottetown	Prince Edward Island				1	1
Winnipeg	Manitoba				8	8
Calgary	Alberta			1	3	4
Saskatoon	Saskatchewan			1	4	5
Edmonton	"				1	1
Regina	"				2	2
Western Inspectors	Western Divisions			2		2
Dawson	Yukon Territory				1	1
Nelson	British Columbia			1	1	2
Vancouver	"				3	3
	Grand total for Weights and Measures	1	1	15	102	119

APPENDIX B—*Concluded.*

No. 11.—SUMMARY statement showing the number of permanent officers—*Con.*

GAS (Outside Service).

Districts.	Provinces.	Dead.	Superannuated.	Part of year.	Full year.	Number of Officers employed.
Hamilton	Ontario			1	4	5
London	"			1	7	8
Ottawa	"			2	3	5
Toronto	"				12	12
Montreal	Quebec			1	6	7
Quebec	"			1	1	2
Sherbrooke	"				2	2
Fredericton	New Brunswick				1	1
St. John	"				2	2
Halifax	Nova Scotia				3	3
Charlottetown	Prince Edward Island				1	1
Winnipeg	Manitoba				6	6
Victoria	British Columbia				2	2
	Grand total for Gas			6	50	56

ELECTRIC LIGHT (Outside Service).

Divisions.	Provinces.	Part of year.	Full year.	Number of Officers employed.
Belleville	Ontario		3	3
Fort William	"		1	1
Sudbury	"	1		1
Three Rivers	Quebec		1	1
Calgary	Alberta		1	1
Edmonton	Saskatchewan		1	1
Regina	"		2	2
Vancouver	British Columbia		7	7
Yukon	Yukon Territory		1	1
Inspector of Western Dominion			1	1
	Grand total for Electricity	1	18	19

RECAPITULATION.

Departmental Staff, Ottawa	84
Excise	362
Weights and Measures	114
Preventive, Excise	78
Preventive, Weights and Measures	24
Gas	44
Electric Light	14
Excise and Gas	9
Excise and Electric Light	2
Excise and Food	12
Excise, Weights and Measures, Electric Light	1
Weights and Measures and Electric Light	1
Weights and Measures and Food	2
Weights and Measures and Gas	1
Food and Preventive Excise	2
Gas and Electric Light	1
Gas and Food	1
Excise and Preventive Excise	1
Grand total of employees	753

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

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REPORTS, RETURNS, AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE FISCAL YEAR ENDED MARCH 31

1917

PART II

WEIGHTS AND MEASURES, GAS AND ELECTRICITY

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1917

[No. 13—1918.]

REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE

OF THE

INSPECTION OF WEIGHTS AND MEASURES, GAS AND ELECTRICITY.

To the Honourable
The Minister of Inland Revenue.

SIR,—I have the honour to submit the annual report on the inspection of weights and measures, gas and electricity, with the usual statements in connection therewith for the fiscal year ended March 31, 1917.

J. U. VINCENT,
Deputy Minister.

Inland Revenue Department,
Ottawa, July 2, 1917.

WEIGHTS AND MEASURES ANNUAL REPORT.

DEPARTMENT OF INLAND REVENUE,
WEIGHTS AND MEASURES STANDARDS BRANCH,

OTTAWA, July 6, 1917.

J. U. VINCENT, K.C., B.A., L.Ph.,
Deputy Minister of Inland Revenue,
Ottawa.

SIR,—I have the honour to submit the annual report on the Weights and Measures Inspection Service of the Dominion for the fiscal year ended March 31, 1917.

First.—The total revenue collected during the year for the inspection of weights and measures was $131,625.60 as against $112,136.81 collected during the twelve months ended March 31, 1916, showing an increase of $19,488.79 in favour of the year just closed.

Second.—The total expenditure was $188,086.60 as against $181,113.86 expended during the year ended March 31, 1916.

Third.—Appendix A gives a summary statement of the receipts and expenditures of each inspection division.

Fourth.—The revenue collected represents 69·9 per cent of the total expenditures as against 61·9 per cent last year. As an inspection and protective service, Weights and Measures is necessarily unremunerative, and is so accepted as an administrative obligation in all countries.

Conditions naturally vary immensely in such a vast and varied country as Canada. Some divisions, including large towns or scale factories, show collections equalling or exceeding expenditure, whilst in other divisions, including immense but sparsely settled districts such as the Rocky mountains, both shores of the St. Lawrence gulf, Labrador, and Gaspe, the cost of itinerary inspections necessarily exceeds inspection fees collected, yet the public must be given protection in such parts.

As giving some idea of the ground covered in the course of inspection work, it might be remarked that in Manitoba, five officers working out of Winnipeg travelled on itineraries 9,393 miles during the months of September, October, and November, whilst for the same months four officers of Saskatoon travelled 9,956 miles. Similar conditions apply to the divisions at Regina, Calgary, and Edmonton.

Fifth.—As the West develops, travelling mileage increases year by year. As the land is put to cultivation, so elevators, requiring exacting annual inspection, increase in numbers. The following table gives an idea of the rate of this increase:—

	Stations.	Elevators.	Capacity.
	No.	No.	Bushels.
1910–11	863	1,909	105,462,700
1911–12	937	2,037	108,649,900
1912–13	1,048	2,319	127,224,550
1913–14	1,217	2,607	154,765,000
1914–15	1,247	2,813	168,624,000
1915–16	1,334	3,059	180,988,000
1916–17	1,400	3,360	193,844,000

From the table it will be seen that both the number of stations and country elevators has nearly doubled since 1910.

Sixth.—Owing to the war, railway facilities are most inadequate; on some western branch lines there are only one or two mixed trains a week. Officers therefore have to hire teams or auto cars, charges for which are exceedingly high. Yet the importance of inspection work and accuracy in weights and measures increases in direct ratio to the increased cost of commodities and must be carried on.

Seventh.—In my last report I made mention of the fact that two new divisions had been established in the West, one at Regina, comprising the southern half of Saskatchewan, and the other at Edmonton, comprising the northern half of Alberta. That this step was justified is proved by results, as shown in the following table of collections:—

	1915-16.	1916–17.
	$ cts.	$ cts.
Saskatoon	9,543 85	9,407 00
Regina		10,458 40
Calgary	5,875 00	4,292 65
Edmonton		4,224 60

More important than the doubled collections for the two provinces is the fact that double the inspection work has been done, which it must be assumed was previously undone. Considerable credit is due Inspector D. J. McLean, of Regina, and his staff, for the excellent work done in the first year of this new division.

Eighth.—During the year, 28,375 pieces of Babcock milk and cream test glassware have been tested by the Weights and Measures Standards Branch, of which 27,876 have been verified and stamped, producing a revenue of $1,394.75.

Ninth.—In appendices B and C will be found detailed statements of the various weights and measures, etc., presented for verification, verified, and rejected during the year, of which the following is a summary:—

—	Presented.	Verified.	Rejected.	Percentage of Rejections.
Weights	79,327	78,767	560	0·7
Measures of capacity	185,611	185,112	499	0·25
" length	7,443	1,390	53	0·71
Balances, equal arm	13,606	13,226	380	2·8
" steelyards	12,002	11,897	105	0·87
" platform	62,389	59,563	2,826	4·5
" computing, automatic, etc	19,199	18,383	816	4·2
Pumps, measuring	6,741	6,576	165	2·4

The percentage of rejections is low, and does not represent actual conditions, because officers adjust or assist in adjusting incorrect weights, weighing and measuring machines whenever possible, and when adjustment does not involve expert mechanical training. Were this not done the figures for rejections would be very much higher.

Tenth.—This is the first year statistics have been compiled under the new classification, the results being very satisfactory. The articles heretofore shown under the miscellaneous column, 18,091 last year, are now classified under various headings, and are seen to represent this year, *inter alia,* 19,190 modern price computing scales, 6,576 gasoline measuring pumps, whilst the number of weights and measures of the metric system inspected, are shown for the first time.

During the year, seventy-two seizures were made, in the main of incorrect and worn-out weights and measures found in use for trade. Three were made for refusal to pay inspection fee, the machines being released upon subsequent payment under threat of prosecution.

Five prosecutions were instituted, two for the wilful falsification of a weighing machine, one for refusal to pay fees, and one for obstructing an officer.

THE METRIC SYSTEM.

Due consideration must be given to the continued campaign for the compulsory introduction of this system both in England and the United States. Advantage is taken of the fact that co-operation with allied metric countries has led to considerable increase in the use of metric units, but such increase is confined in the main to the manufacture of munitions and artillery, and does not apply to general trade.

For a generation nearly, the metric system has been legal for trade and export in England, Canada, and the United States, yet its use and increase has been practically nil. Were it essential for foreign trade with metric countries, its adoption and

increase should be natural and automatic, but such evidence is lacking. For domestic trade and industry it is unnecessary. The issue involved, then, is whether the latter, including agriculture, where the bushel, the acre, and the dollar constitute the trinity of the farmers' business, shall be disorganized by the compulsory substitution of the hectolitre and the hectare, and the metric system generally, in the interests and furtherance of the limited export trade to metric countries, in a great part of which the units of measure or weight do not enter at all.

The metric weights and measures inspected during the last fiscal year, as shown for the first time in the statistical tables, are given below, in comparison with those of Dominion denomination:—

	Metric.	Dominion
Measures of capacity	1,444	184,167
" length	0	7,443
Weighing machines	268	109,609
Weights	727	78,600

Such figures of course do not give the total weights and measures in use, as those in science and manufacture are not subject to inspection, and therefore do not appear.

The war is still suspending the reproduction of the copies of the Dominion primary standards destroyed in the Parliament fire, and also the purchase from France of copies of the international metre and kilogram, as the primary metric standards of the Dominion.

I remain, sir,

Your obedient servant,

E. O. WAY,
Chief Inspector.

GAS AND ELECTRICITY ANNUAL REPORT.

Department of Inland Revenue,
Electrical Standards Laboratory,

Ottawa, July 12, 1917.

J. U. Vincent, Esq., K.C., B.A., L.Ph.,
Deputy Minister of Inland Revenue,
Ottawa.

Sir,—I have the honour to submit the annual report on the inspection of gas and electricity throughout Canada during the year ended March 31, 1917.

The combined services have recovered somewhat from the depression experienced during the fiscal year 1915-16, when a deficit in the revenue of $8,012.40 was shown. At the close of the last fiscal year the revenue for the combined services shows a surplus of $17,405.57.

INSPECTION OF GAS.

The total revenue collected during the fiscal year ended March 31, 1917, for the inspection of gas and gas meters was $54,157.35 as compared with $46,034.80 for the previous year. The total expenditure was $61,736.12 as compared with $66,255.58 for the year which ended March 31, 1916.

A return of gas companies distributing manufactured gas and the calorimetric tests connected therewith will be found in Appendix E; also a list of the natural gas companies registered, and the number of meters in use.

A statement showing the number of gas meters presented for verification during the fiscal year will be found in Appendix F.

ELECTRICITY INSPECTION.

The total revenue collected for meter inspection, etc., during the year ended March 31, 1917, was $71,467.18 as compared with $70,051.75 collected in the previous year. The total expenditure, including cost of inspection and maintenance of equipment, was $46,482.84 as against $57,843.37 for the fiscal year which ended on March 31, 1916.

The combined services of electricity and gas, the duties connected with which are performed by one set of officers, show the following financial results:—

Revenue	$ 125,624 53
Expenditure	108,218 96
Surplus	$ 17,405 57

A comparative statement of revenue and expenditure for the combined services during the past ten years is as follows:—

Years.	Gas and Electricity.	
	Revenue.	Expenditure.
	$ cts.	$ cts.
1907–08	86,552 20	48,831 75
1908–09	92,450 21	54,018 71
1909–10	100,647 20	55,514 14
1910–11	112,150 25	63,385 03
1911–12	117,917 45	80,537 87
1912–13	138,090 95	93,000 83
1913–14	143,386 40	113,014 76
1914–15	139,403 25	124,233 49
1915–16	116,086 55	124,098 95
1916–17	125,624 53	108,218 96

showing on the ten years' operations an excess of revenue over expenditure of $307,455.50.

A statement showing the quantities of electrical energy exported from Canada under authority of the Electricity Exportation Act by certain hydro-electric companies will be found in Appendix I.

A list of electric light and power companies registered under the provisions of the Electricity Inspection Act, with certain statistics connected with their operation, will will be found in Appendix J.

It may be stated, in conclusion, that the work of inspection is returning to its normal proportions, and it becomes a question as to how long the reduced staff will be able to satisfactorily meet the requirements of the service. As you are well aware, one or more men have enlisted for the front from nearly every inspection district in the country, and should the work continue to increase it may be found necessary to employ temporary assistance until the regular officers return from the war.

I remain, sir,

Your obedient servant,

ORMOND HIGMAN,
Chief Engineer.

APPENDIX A.

STATEMENT of Weights and Measures Expenditures and Revenues during the fiscal year ended March 31, 1917.

Inspection Division.	Inspectors.	Expenditures.						Revenues.
		Salaries.	Special Assistance.	Rent.	Travelling Expenses	Sundries.	Total.	
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Belleville	Diamond, F. D	3,624 78	75 00	772 00	985 76	275 95	5,733 49	2,492 80
Hamilton	Scaly, J. C	8,182 92			2,953 44	121 21	11,257 57	12,919 10
Kingston	Gallagher, T	2,741 58			306 09	45 10	3,092 77	1,104 05
London	Hughes, R. A	5,646 22	120 00		2,775 86	187 82	8,729 90	10,974 90
Ottawa	Hinchey, E. H	10,816 20	1,823 65		2,331 35	120 04	15,091 24	8,865 45
Toronto	McConvey, J. J	8,741 46			1,983 29	108 91	10,833 66	14,735 20
	Ontario	39,753 16	2,018 65	772 00	11,335 79	859 03	54,738 63	51,091 50
Montreal	Hébert, J. A., Actg.	13,235 69	1,422 42	1,624 98	2,727 60	371 75	19,382 44	11,932 50
Quebec	Roy, C. E	9,399 72	3,971 08	300 00	2,865 22	222 10	16,758 12	5,947 60
Sherbrooke	Delorme, O. C	2,983 20	582 14	625 00	881 45	104 91	5,176 70	6,158 85
St. Hyacinthe	Morin, J. P	2,199 96	565 71		1,140 80	77 53	3,984 00	2,526 70
Three Rivers	Lessard, A	3,466 50	904 32		410 11	88 76	4,869 69	985 05
	Quebec	31,285 07	7,445 67	2,549 98	8,025 18	865 05	50,170 95	27,550 70
St. John, N.B	Barry, James	4,916 54	16 00		905 24	151 24	5,989 02	3,492 40
Halifax	O'Brien, W	1,883 23	859 92	507 36	669 09	236 25	4,155 85	1,335 70
Pictou	Dustan, W. M	3,241 50	48 00		695 10	74 87	4,059 47	1,959 20
	Nova Scotia	5,124 73	907 92	507 36	1,364 19	311 12	8,212 32	3,294 90
Charlottetown, P.E.I.	Davy, E	1,099 92	60 00		246 54	22 56	1,429 02	621 30
Winnipeg, Man	McKay, R	7,824 78		1,408 29	4,824 52	216 88	14,274 47	12,229 05
Regina	McLean, D. J	2,899 92	1,390 93		5,689 73	282 64	10,263 22	10,458 40
Saskatoon	Johnston, Chs. W	5,391 48	1,019 99	180 00	5,248 93	231 29	12,071 69	9,407 00
	Saskatchewan	8,291 40	2,410 92	180 00	10,938 66	513 93	22,334 91	19,865 40
Calgary	Costello, J. W	4,775 07	590 34		2,105 52	208 71	7,679 64	4,292 65
Edmonton	McDougall, J. C	1,200 00		540 00	1,757 15	292 08	3,789 23	4,224 60
	Alberta	5,975 07	590 34	540 00	3,862 67	500 79	11,468 87	8,517 25
Nelson	Parker, Thos	1,716 54	363 30	180 00	1,881 20	104 25	4,245 29	1,227 45
Vancouver	Dutton, A. H	2,420 73	48 00		176 35	443 65	3,088 73	2,294 05
	British Columbia	4,137 27	411 30	180 00	2,057 55	547 90	7,334 02	3,521 50
Dawson, Yukon	Stingle, J. W	999 96				14 00	1,013 96	46 85
Chief Inspector						220 02	220 02	
A. A. Bowen J. G. White	Inspectors of Elevator Scales	298 63 244 58			45 68		344 31 244 58	
Total for	Divisions	109,951 11	13,860 80	6,137 63	43,606 02	4,222 52	177,778 08	
Milk Test Glassware								1,394 75
General Contingencies						1,409 26	1,409 26	
Printing						3,339 73	3,339 73	
Stationery						653 15	653 15	
Provisional Allowance						4,690 23	4,690 23	
International Bureau of Weights and Measures						216 15	216 15	
Grand Totals		109,951 11	13,860 80	6,137 63	43,606 02	14,531 04	188,086 60	131,625 60

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister

APPENDIX B.

RETURN showing the Number of Weights, Measures, and Weighing Machines verified in each Inspection Division, during the Fiscal Year ended March 31, 1917.

Inspection Divisions.	Weighing Machines.																Weights.				
			Platform Scales.				Spring Scales.			Computing Scales.		Automatic Scales.									
	Equal Arms.	Steelyard.	Ordinary.	Pitless.	Dial.	Track.	Trade.	Ice and Dairy.	Automatic Slot.	Spring	All Others.	Grain Elevator.	All Others.	Suspension Scales.	Combined Avdp. and Metric.	Metric.	Avoirdupois.	Troy.	Metric.	Tolerated.	Tobacco.
Belleville	113	24	877	29	.....	17	8	1	9	94	70	.....	2	.....	.....	54	547	.....	134	.....	.....
Hamilton	2,335	4,936	7,852	5	13	20	16	24	11	86	800	.....	2	6	.....	5	12,548	64	20	.....	.....
Kingston	80	4	352	9	.....	1	7	12	.....	145	.....	4	.....	.....	.....	1	438	17	.....	.....	.....
London	594	98	3,435	91	266	26	3	49	5	35	3,165	6	1	7	.....	.....	2,971	.....	.....	.....	.....
Ottawa	1,338	30	6,082	6	1	26	37	15	21	316	677	7	1	2	.....	.....	7,652	.....	.....	.....	.....
Toronto	1,062	1,754	7,636	7	3	27	135	1	5	1,372	973	5	.....	6	.....	1	4,944	16	24	.....	.....
Ontario	5,522	6,846	26,232	147	283	117	206	102	51	2,048	5,685	22	6	21	.....	61	29,100	97	178	.....	.....
Montreal	1,822	627	4,931	26	.....	36	266	63	85	349	1,003	35	42	9	7	19	10,304	33	453	3	37
Quebec	1,223	463	2,466	2	6	11	66	.....	5	144	328	46	9	.....	.....	.....	8,265	.....	.....	459	425
Sherbrooke	752	2,504	4,836	117	.....	7	17	9	.....	70	2,959	4	.....	7	.....	78	6,677	19	37	6	.....
St. Hyacinthe	449	62	1,402	2	.....	2	29	.....	1	13	86	.....	.....	.....	.....	1	2,181	.....	.....	.....	.....
Three Rivers	139	21	415	1	.....	6	8	7	.....	27	66	.....	.....	.....	.....	5	780	.....	.....	.....	.....
Quebec	4,385	3,677	14,005	148	6	62	386	79	91	603	4,442	85	51	16	7	103	28,207	52	490	468	462
St. John, N.B.	647	61	1,779	.....	.....	13	105	.....	1	85	288	.....	.....	.....	.....	.....	2,828	.....	.....	.....	.....
Halifax	239	18	695	.....	.....	7	70	6	.....	32	184	.....	.....	1	3	.....	697	.....	.....	11	.....
Pictou	305	31	724	2	1	.....	30	.....	.....	154	300	.....	.....	8	.....	.....	1,298	.....	.....	.....	.....
Nova Scotia	544	49	1,419	2	1	7	100	6	.....	186	484	.....	.....	9	3	.....	1,995	.....	.....	11	.....

Charlottetown, P.E.I.	132	22	347	1	.....	5	16	2	.....	19	49	.....	.....	3	.....	.....	687	.....	.....	.....	.....
Winnipeg, Man.	618	162	3,892	78	38	27	105	12	2	561	674	30	6	10	3	86	5,636	.....	59	.....	.....
Regina	302	274	3,438	118	.....	5	25	.....	.....	237	606	15	.....	6	.....	.....	1,702	.....	.....	.....	.....
Saskatoon	542	495	3,411	83	1	6	11	.....	1	354	431	16	3	.....	.....	.....	3,041	.....	.....	.....	.....
Saskatchewan	844	769	6,849	201	1	11	36	.....	1	591	1,037	31	3	6	.....	.....	4,743	.....	.....	.....	.....
Calgary	84	92	687	22	.....	17	9	.....	1	46	210	32	1	.....	.....	1	1,273	.....	.....	.....	.....
Edmonton	112	99	1,285	87	2	12	32	.....	.....	139	320	37	.....	.....	.....	16	922	.....	.....	.....	.....
Alberta	196	191	1,972	109	2	29	41	.....	1	185	530	69	1	.....	.....	17	2,195	.....	.....	.....	.....
Nelson	196	48	545	19	.....	21	24	1	1	153	133	.....	.....	.....	.....	.....	805	.....	.....	.....	.....
Vancouver	139	71	1,110	.....	1	17	251	12	.....	287	343	5	5	.....	.....	.....	631	.....	.....	.....	.....
British Columbia	335	119	1,655	19	1	38	275	13	1	440	476	5	5	.....	.....	.....	1,436	.....	.....	.....	.....
Dawson, Yukon	3	1	22	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	88	35	.....	.....	.....
Totals	13,226	11,897	58,217	705	332	309	1,271	214	148	4,718	13,665	242	72	65	13	267	76,915	184	727	479	462

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B—*Continued.*

RETURN showing the Number of Weights, Measures and Weighing Machines rejected in each Inspection, during the Fiscal Year ended March 31, 1917.

Inspection Division.	Weighing Machines.																Weights.				
			Platform Scales.				Spring Scales.			Computing Scales.		Automatic Scales.									
	Equal Arms.	Steelyard.	Ordinary.	Pitless.	Dial.	Track.	Trade.	Ice and Dairy.	Automatic Slot.	Spring	All Others.	Grain Elevator.	All Others.	Suspension Scales.	Combined Avdp. and Metric.	Metric.	Avoirdupois.	Troy.	Metric.	Tolerated.	Tobacco.
Belleville	1		48	3			1			1											
Hamilton	148	24	542	2	2	13	8	1	13	44	225			4			86	47			
Kingston	1	1	30							1							6				
London	12	2	194	2	2	3	2			15	85						11				
Ottawa	33	3	147			2	2		9	33	39						96				
Toronto	40	9	189			2	7			23	38			1			5				
Ontario	235	39	1,150	7	4	20	20	1	22	117	387			5			204	47			
Montreal	70	27	248			3	18		4	28	33	2	4				108				
Quebec	15	5	41	1		1	5			4	4						108			4	25
Sherbrooke		2	14	2	1	2	1			1											
St. Hyacinthe	4	6	87			1	4				9										
Three Rivers		1	28					1	1	1	2										
Quebec	89	41	418	3	1	7	28	1	5	35	48	2	4				216			4	25
St. John, N.B	8	5	29				3										6				
Halifax	1		11			1															
Pictou			10								1										
Nova Scotia	1		21			1					1										

Charlottetown, P.E.I																						
Winnipeg, Man	19	4	208	8	2	2	2			66	42	1		2		1	6					
Regina	9		331	25		3	8			8	19						11					
Saskatoon	6	6	292	10						19	16	1					28					
Saskatchewan	15	6	623	35		3	8			27	35	1					39					
Calgary	10	8	140	12		15	10			14	24						13					
Edmonton	3	2	73	11	1	2	2			10	6	1	1									
Alberta	13	10	213	23	1	17	12			24	30	1	1				13					
Nelson																						
Vancouver			30				1			2	2											
British Columbia			30				1			2	2											
Dawson, Yukon																						
Totals	380	107	2,692	76	8	50	74	2	27	271	545	5	5	7		1	484	47		4	25	

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX B—*Concluded.*

RETURN showing the Total Number of Weights, Measures and Weighing Machines Submitted in each Inspection Division during the Fiscal Year ended March 31, 1917.

Inspection Division.	Weighing Machines.														Weights.					
			Platform Scales.				Spring Scales.			Computing Scales.		Automatic Scales.								
	Equal Arms.	Steelyard.	Ordinary.	Pitless.	Dial.	Track.	Trade.	Ice and Dairy.	Automatic Slot.	Spring	All Others.	Grain Elevator.	All others.	Suspension Scales.	Combined Avdp and Metric.	Metric.	Avoirdupois.	Troy.	Metric.	Tolerated.	Tobacco.
Belleville	114	24	925	32	.....	17	9	1	9	95	70	.....	2	.....	.....	54	547	.....	134	..	...
Hamilton	2,483	4,960	8,394	7	15	33	24	25	24	130	1,025	.....	2	10	.....	5	12,634	111	20	.....	...
Kingston	81	5	382	9	.....	1	7	12	.....	146	.....	4	.....	.....	.....	1	444	17	.....	.....	...
London	606	100	3,627	93	268	29	5	49	5	50	3,250	6	1	7	.....	.....	2,982	.....	.....	.....	...
Ottawa	1,371	33	6,229	6	1	28	39	15	30	349	716	7	1	2	.....	.....	7,748	.....	.....	.....	...
Toronto	1,102	1,765	7,825	7	3	29	142	1	5	1,395	1,011	5	.....	7	.....	1	4,949	16	24	.....	.....
Ontario	5,757	6,885	27,382	154	287	137	226	103	73	2,165	6,072	22	6	26	.....	61	29,304	144	178	.....	...
Montreal	1,892	654	5,179	26	.....	39	284	63	89	377	1,036	37	46	9	7	19	10,412	33	453	3	37
Quebec	1,238	468	2,507	3	6	12	71	.....	5	148	332	46	9	.....	.....	.....	8,373	.....	.....	463	450
Sherbrooke	752	2,506	4,850	119	1	9	18	9	...	71	2,959	4	.....	7	.....	78	6,677	19	37	6	.....
St Hyacinthe	453	68	1,489	2	.....	3	33	.....	1	14	95	.....	.....	.....	.....	1	2,181	.....	.....	.....	.....
Three Rivers	139	22	443	1	.....	6	8	8	1	28	68	.....	.....	.....	.....	5	780	.....	.....	.....	.....
Quebec	4,474	3,718	14,468	151	7	69	414	80	96	638	4,490	87	55	16	7	103	28,423	52	490	472	487
St John, N.B	655	66	1,808	.....	.....	13	108	.....	1	85	288	.....	.....	.....	.....	.....	2,834	.....	.....	.....	...
Halifax	240	18	706	.....	.....	8	70	6	.....	32	184	.....	.....	1	3	.....	697	.....	.....	11	.....
Pictou	305	31	734	2	1	.....	30	.....	.....	154	301	.....	.....	8	.....	.....	1,298	.....	.....	.....	.....
Nova Scotia	545	49	1,440	2	1	8	100	6	.....	186	485	.....	.....	9	3	.....	1,995	.....	.....	11	.....

Charlottetown, P E I..	132	22	347	1	.....	5	16	2	.....	19	49	.....	.....	3	.....	.....	687	.....	.....	.....	.....
Winnipeg, Man.....	637	166	4,100	86	40	29	107	12	2	627	716	31	6	12	3	87	5,642	.....	59	.....	.....
Regina.....	311	274	3,769	143	.....	8	33	.....	.....	245	625	15	.....	6	.....	.....	1,713	.....	.....	.....	.....
Saskatoon.....	548	501	3,703	93	1	6	11	.....	1	373	447	17	3	.....	.....	.....	3,069	.....	.....	.....	.....
Saskatchewan	859	775	7,472	236	1	14	44	.....	1	618	1,072	32	3	6	.....	.....	4,782	.....	.....	.....	.....
Calgary.....	94	100	827	34	.....	32	19	.....	1	60	234	32	1	.....	.....	1	1,286	.....	.....	.....	.....
Edmonton.....	115	101	1,358	98	3	14	34	.....	.....	149	326	38	1	.....	.....	16	922	.....	.....	.....	.....
Alberta.....	209	201	2,185	132	3	46	53	.....	1	209	560	70	2	.....	.....	17	2,208	.....	.....	.....	.....
Nelson.....	196	48	545	19	.....	21	24	1	1	153	133	.....	.....	.....	.....	.....	805	.....	.....	.....	.....
Vancouver.....	139	71	1,140	.....	1	17	252	12	.....	289	345	5	5	.....	.....	.....	631	.....	.....	.....	.....
British Columbia..	335	119	1,685	19	1	38	276	13	1	442	478	5	5	.....	.....	.....	1,436	.....	.....	.....	.....
Dawson, Yukon	3	1	22	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	88	35	.....	.....	.....
Total	13,606	12,002	60,909	781	340	359	1,345	216	175	4,989	14,210	247	77	72	13	268	77,399	231	727	483	487

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX C.

RETURN showing the Number of Measures of Capacity, Lineal Measures and Micellaneous Verified in each Inspection Division, during the Fiscal Year ended March 31, 1917.

Inspection Division	Measures of Capacity.			Measuring Devices.		Lineal Measures	Miscellaneous.	
	Dominion	Metric	Milk Cans	Pumps.	Measuring Tanks.	Dominion.	Scales.	Measures of Capacity.
Belleville	297		3,262	62		3		
Hamilton	18,830		71	200				
Kingston	1,980			19		94		
London	23,625		13,686	385		2,700		
Ottawa	2,229		2,331	361		735		
Toronto	27,363	1,287	19,389	2,168		515		
Ontario	74,324	1,287	38,739	3,195		4,047		
Montreal	22,769		5,382	434	10	1,164		
Quebec	6,615	157		244		1,017		
Sherbrooke	457			48		68	13	
St. Hyacinthe	2,019		1	79		218		
Three Rivers	629			42		51		
Quebec	32,489	157	5,383	847		2,518	13	
St. John, N.B.	3,920		3,685	458		16		
Halifax	805		51	125				5
Pictou	618			333		57	25	
Nova Scotia	1,423		51	458		57	25	5
Charlottetown, P.E.I.	42			59				
Winnipeg, Man.	6,646		10,669	601		286		
Regina	411		950	348		134		
Saskatoon	737			350		286		
Saskatchewan	1,148		950	698		420		
Calgary	9		2,320	58		1		
Edmonton	20		1,713	156		1		
Alberta	29		4,033	214		2		
Nelson	77		20	24		44	4	
Vancouver	37			22			4	
British Columbia	114		20	46		44	8	
Dawson, Yukon	3							
Totals	120,138	1,444	63,530	6,576	10	7,390	46	5

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX C—*Continued.*

RETURN showing the Number of Measures of Capacity, Lineal Measures and Miscellaneous, Rejected in each Inspection Division, during the Fiscal Year ended March 31, 1917.

Inspection Division.	Measures of Capacity.			Measuring Devices.		Lineal Measures.	Miscellaneous.	
	Dominion.	Metric.	Milk Cans.	Pumps.	Measuring Tanks.	Dominion.	Scales.	Measures of Capacity.
Belleville			213					
Hamilton	3		7	22				
Kingston								
London	3			15				
Ottawa	12		30	16		41		
Toronto				4				
Ontario	18		250	57		41		
Montreal				9				
Quebec	6					12		
Sherbrooke								
St. Hyacinthe				20				
Three Rivers				2				
Quebec	6			31		12		
St. John, N.B				3				
Halifax								
Pictou				3			1	
Nova Scotia				3			1	
Charlottetown, P.E.I								
Winnipeg, Man				12				
Regina				17				
Saskatoon				32				
Saskatchewan				49				
Calgary			225	5				
Edmonton				5				
Alberta			225	10				
Nelson								
Vancouver								
British Columbia								
Dawson, Yukon								
Totals	24		475	165		53	1	

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX C—*Concluded.*

RETURN showing the Total Number of Measures of Capacity, Lineal Measures and Miscellaneous, Submitted in each Inspection Division, during the Fiscal Year ended March 31, 1917.

Inspection Divisions.	Measures of Capacity.			Measuring Devices.		Lineal Measures.	Miscellaneous.	
	Dominion.	Metric.	Milk Cans.	Pumps.	Measuring Tanks.	Dominion.	Scales.	Measures of Capacity.
Belleville	297		3,475	62		3		
Hamilton	18,833		78	222				
Kingston	1,980			19		94		
London	23,628		13,686	400		2,700		
Ottawa	2,241		2,361	377		776		
Toronto	27,363	1,287	19,389	2,172		515		
Ontario	74,342	1,287	38,989	3,252		4,088		
Montreal	22,769		5,382	443	10	1,164		
Quebec	6,621	157		244		1,029		
Sherbrooke	457			48		68		
St. Hyacinthe	2,019		1	99		218		
Three Rivers	629			44		51		
Quebec	32,495	157	5,383	878	10	2,530	13	
St. John, N.B	3,920		3,685	461		16		
Halifax	805		51	125				5
Pictou	618			336		57		
Nova Scotia	1,423		51	461		57	26	5
Charlottetown, P.E.I.	42			59				
Winnipeg, Man	6,646		10,669	613		286		
Regina	411		950	365		134		
Saskatoon	737			382		286		
Saskatchewan	1,148		950	747		420		
Calgary	9		2,545	63		1		
Edmonton	20		1,713	161		1		
Alberta	29		4,258	224		2		
Nelson	77		20	24		44	4	
Vancouver	37			22			4	
British Columbia	114		20	46		44	8	
Dawson, Yukon	3							
Totals	120,162	1,444	64,005	6,741	10	7,443	4	5

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX D.

STATEMENT of Gas Inspection Expenditures and Revenues for the Fiscal Year ended March 31, 1917.

Districts.	Inspectors.	Expenditures.						Revenues.
		Salaries.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.	Total.	
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Belleville	Fraser, H.		692 82	200 00	272 95	102 69	1,268 46	2,026 20
Hamilton	Lutz, H.	4,216 57	632 00	65 00	596 85	244 64	5,755 06	5,978 05
London	Nash, A. F.	4,920 05	429 57		655 20	193 63	6,198 45	6,281 10
Ottawa	Kinsman, E. A.	4,374 74	2,464 42	429 90	2 00	42 51	7,313 57	2,649 80
Toronto	Stiver, J. L.	10,899 48	180 00	180 00	217 30	201 06	11,677 84	14,647 90
	Ontario	24,410 84	4,398 81	874 90	1,744 30	784 53	32,213 38	31,583 05
Montreal	Aubin, A.	8,099 84	66 00	432 00	123 05	151 78	8,872 67	13,009 30
Quebec	Cantin, J. A.	766 58					766 58	1,006 20
Sherbrooke	Simpson, A. F.	499 92					499 92	236 00
St. Hyacinthe	Aubin, A., Actg.							86 40
	Quebec	9,366 34	66 00	432 00	123 05	151 78	10,139 17	14,337 90
Fredericton	Wilson, J.E., Actg.	99 96					99 96	
St. John, N.B.	Wilson, J. E.	2,399 88	4 00		287 15	31 50	2,722 53	645 60
	New Brunswick	2,499 84	4 00		287 15	31 50	2,822 49	645 60
Halifax, N.S.	Toale, John	2,399 88		507 36	18 65	18 60	2,944 49	543 60
Charlottetown, P.E.I.	Bell, J. H.	499 92					499 92	39 50
Winnipeg, Man.	Hamilton, R.	6,749 88					6,749 88	2,780 55
Calgary, Alta.	Kyle, W. P.		515 02		91 30	49 84	656 16	997 90
Vancouver	Stott, John				0 35	3 75	4 10	2,412 65
Victoria	Dresser, F.	1,499 88	4 00		6 20	28 11	1,538 19	816 60
	British Columbia	1,499 88	4 00		6 55	31 86	1,542 29	3,229 25
	Inspector of Eastern Dominion					17 37	17 37	
	Inspector of Western Dominion				231 90	105 66	337 56	
	Totals for Inspectors	47,426 58	4,987 83	1,814 26	2,502 90	1,191 14	57,922 71	54,157 35
General Contingencies						316 12	316 12	
Printing						1,725 18	1,725 18	
Stationery						1,772 11	1,772 11	
Grand Totals		47,426 58	4,987 83	1,814 26	2,502 90	5,004 55	61,736 12	54,157 35

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917
13—2½

J. U. VINCENT,
Deputy Minister.

APPENDIX

STATEMENT of the Coal and Water Gas Companies registered and the the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
Barrie, Ont...	Carburetted Water Gas...	665	Apr., 1916.	2
Barrie Gas Co...	"		May 1916..	2
	"		June, 1916..	2
	"		July, 1916..	2
	"		Aug. 1916..	2
	"		Sept., 1916..	3
	"		Oct., 1916..	2
	"		Nov., 1916..	2
	"		Dec., 1916 ..	2
	"		Jan., 1917..	2
	"		Feb., 1917..	2
	"		Mar., 1917..	2
Belleville, Ont...	Coal Gas and Carburetted			
Corporation of Belleville.	Water Gas.....	1,468	Apr., 1916..	4
	"		May, 1916..	4
	"		June, 1916..	5
	"		July, 1916..	4
	"		Aug. 1916..	4
	"		Sept., 1916..	5
	"		Oct., 1916..	4
	"		Nov., 1916..	4
	"		Dec., 1916..	4
	"		Jan., 1917..	4
	"		Feb., 1917..	4
	"		Mar., 1917..	4
Brandon, Man...	Coal Gas.....	1,110		Testing
Brandon Gas & Power Co.				
Brockville, Ont...	Carburetted W. ter Gas...	1,828	Apr., 1916..	4
Corporation of Brockville.	"		May, 1916..	4
	"		June, 1916..	5
	"		July, 1916..	4
	"		Aug., 1916..	4
	"		Sept., 1916..	5
	"		Oct., 1916..	4
	"		Nov., 1916..	4
	"		Dec., 1916..	4
	"		Jan., 1917..	4
	"		Feb., 1917..	4
	"		Mar., 1917..	4
Charlottetown, P.E.I....	Coal Gas.....	65	Apr., 1916..	2
Charlottetown Lt. & Pr. Co.	"		May, 1916..	2
	"		June, 1916..	2
	"		July, 1916..	2
	"		Aug., 1916..	2
	"		Sept., 1916..	3
	"		Oct., 1916..	2
	"		Nov., 1916..	1

SESSIONAL PAPER No. 13

E.

Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
2	0	2	2	624	615	620		None.
2	0	2	2	653	619	636		"
2	0	2	2	586	583	585		"
3	0	2	3	611	571	589		"
2	0	2	2	571	555	563		"
2	0	3	2	685	590	637		"
2	0	2	2	606	577	592		"
2	0	2	2	592	586	589		"
2	0	2	2	580	548	564		"
2	0	2	2	576	559	567		"
2	1	2	2	577	569	573		"
2	0	2	2	579	549	564	590	"
4	2	4	4	601	480	523		499-511-480
4	1	4	4	595	519	553		519
5	0	5	5	586	524	548		None.
4	0	4	4	609	530	554		"
5	0	4	5	533	522	526		"
4	0	5	4	534	516	523		516
4	0	4	4	527	523	525		None.
4	0	4	4	539	523	532		"
4	0	4	4	533	506	521		506
4	0	4	4	532	527	531		None.
4	2	4	4	533	502	521		502
4	2	4	4	542	524	530	532	None.
apparatus not yet installed.								
4	0	4	4	596	577	588		None.
4	0	4	4	560	556	558		"
5	0	5	5	576	566	570		"
4	0	4	4	586	564	575		"
5	0	4	5	574	548	559		"
4	0	5	4	600	528	558		"
4	0	4	4	568	554	563		"
4	0	4	4	548	542	545		"
4	0	4	4	560	534	544		"
4	0	4	4	565	539	559		"
4	0	4	4	594	572	580		"
4	0	4	4	588	556	566	564	"
4	3	2	2	761	744	753		None.
4	4	2	2	758	755	757		"
3	0	2	3	758	732	748		"
2	0	2	2	789	746	768		"
0	0	2	0	...	...	...		"
2	0	3	2	755	706	731		"
2	0	2	2	771	770	770		"
1	0	1	1	672	672	672	743	"

Manufacture stopped and plant shut down in November.

STATEMENT of the Coal and Water Gas Companies registered and the
the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
Cobourg, Ont.	Coal Gas	436	Apr., 1916.	2
Cobourg Gas Light and Water Co.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2
Cornwall, Ont.	Carburetted Water Gas.	375	Apr., 1916.	2
Stormont Electric Lt. & Pr. Co.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2
Deseronto, Ont.	Carburetted Water Gas.	128	Apr., 1916.	2
Corporation of Deseronto.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2
Guelph, Ont.	Coal Gas and Carburetted			
Corporation of Guelph.	Water Gas	3,241	Apr., 1916.	4
	"		May, 1916.	4
	"		June, 1916.	5
	"		July, 1916.	4
	"		Aug., 1916.	4
	"		Sept., 1916.	5
	"		Oct., 1916.	4
	"		Nov., 1916.	8
	"		Dec., 1916.	8
	"		Jan., 1917.	8
	"		Feb., 1917.	8
	"		Mar., 1917.	8

Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
2	0	2	2	631	624	628		None.
2	0	2	2	633	624	629		"
3	0	2	3	610	588	600		"
2	0	2	2	621	598	610		"
2	0	2	2	618	592	605		"
2	0	3	2	609	568	589		"
2	0	2	2	594	587	591		"
2	0	2	2	592	590	591		"
2	0	2	2	601	584	593		"
2	0	2	2	623	593	608		"
2	0	2	2	600	592	596		"
2	0	2	2	603	598	600	604	"
2	2	2	2	615	556	586		None.
2	2	2	2	636	595	616		"
2	2	2	2	564	551	558		"
2	2	2	2	604	575	5 0		"
2	2	2	2	591	584	588		"
2	2	3	2	615	571	593		"
2	2	2	2	584	576	580		"
2	2	2	2	529	526	528		"
2	2	2	2	574	574	574		"
2	2	2	2	570	523	547		"
2	2	2	2	562	531	547		"
2	2	2	2	542	540	541	571	"
2	0	2	2	646	575	611		None.
2	1	2	2	650	645	647		"
2	0	2	2	672	642	657		"
2	1	2	2	698	688	693		"
3	2	2	3	695	582	624		"
2	1	3	2	744	731	738		"
2	1	2	2	686	663	675		"
2	0	2	2	719	678	698		"
2	0	2	2	742	732	737		"
2	1	2	2	761	726	744		"
2	2	2	2	751	714	732		"
2	0	2	2	712	697	704	688	"
4	0	8	8	627	583	610		None.
4	0	8	8	604	574	587		"
5	0	10	10	639	581	605		"
4	0	8	8	634	577	602		"
5	0	8	10	611	560	582		"
4	0	10	8	607	578	592		"
4	0	8	8	596	574	5 5		"
8	0	8	8	604	562	580		"
8	0	8	8	578	539	560		"
8	0	8	8	554	530	541		"
8	0	8	8	577	538	559		"
8	0	8	8	597	538	574	58[illegible]	"

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
Halifax, N.S.	Coal Gas	1,602	Apr., 1916.	4
Halifax Electric Tramway Co.	"		May, 1916.	4
	"		June, 1916.	5
	"		July, 1916.	4
	"		Aug., 1916.	4
	"		Sept., 1916.	5
	"		Oct., 1916.	4
	"		Nov., 1916.	4
	"		Dec., 1916.	4
	"		Jan., 1917.	4
	"		Feb., 1917.	4
	"		Mar., 1917.	4
Hamilton, Ont.	Coal Gas	665	Apr., 1916.	2
United Gas & Fuel Co.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2
Kingston, Ont.	Carburetted Water Gas	2,958	Apr., 1916.	4
Corporation of Kingston.	"		May, 1916.	4
	"		June, 1916.	5
	"		July, 1916.	4
	"		Aug., 1916.	4
	"		Sept., 1916.	5
	"		Oct., 1916.	4
	"		Nov., 1916.	8
	"		Dec., 1916.	8
	"		Jan., 1917.	8
	"		Feb., 1917.	8
	"		Mar., 1917.	8
Kitchener, Ont.	Coal Gas and Carburetted Water Gas	3,231	Apr., 1916.	4
Corporation of Kitchener.	"		May, 1916.	4
	"		June, 1916.	5
	"		July, 1916.	4
	"		Aug., 1916.	4
	"		Sept., 1916.	5
	"		Oct., 1916.	4
	"		Nov., 1916.	8
	"		Dec., 1916.	8
	"		Jan., 1917.	8
	"		Feb., 1917.	8
	"		Mar., 1917.	8

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
5	0	4	5	590	567	580		None.
4	0	4	4	600	583	590		"
5	0	5	5	593	574	582		"
4	0	4	4	586	583	585		"
4	0	4	4	586	573	577		"
5	0	5	5	571	554	564		"
4	0	4	4	556	532	573		"
4	0	4	4	612	568	582		"
4	0	4	4	562	549	556		"
4	0	4	4	567	552	557		"
4	0	4	4	554	536	547		"
4	0	4	4	540	524	532	569	"
2	0	2	2	534	522	528		None.
3	0	2	2	543	523	533		"
2	0	2	2	534	525	530		"
3	0	2	2	557	534	546		"
2	0	2	2	553	523	538		"
3	0	3	3	535	523	529		"
2	0	2	2	531	522	527		"
2	0	2	2	533	531	532		"
2	0	2	2	666	531	599		"
2	0	2	2	530	528	529		"
2	0	2	2	541	526	534		"
2	0	2	2	531	522	527	538	"
4	0	8	8	644	595	618		None.
4	0	8	8	679	596	643		"
5	0	10	10	680	622	644		"
4	1	8	8	662	617	632		"
5	0	8	10	611	524	566		"
4	1	10	8	729	673	694		"
4	3	8	8	737	681	700		"
8	8	8	8	723	584	648		"
8		8	8	665	530	584		"
8	6	8	8	682	505	568		505
8	0	8	8	688	521	607		None.
8	0	8	8	682	511	599	625	511
4	0	8	8	531	520	525		None.
4	0	8	8	541	524	527		"
5	0	10	10	556	520	526		"
4	0	8	8	547	521	534		"
4	0	8	8	593	533	561		"
5	0	10	10	598	522	553		"
4	0	8	8	563	520	531		"
6	0	8	8	547	501	526		501
8	0	8	8	569	524	541		None.
8		8	8	569	522	539		"
8	0	8	8	556	520	535		"
8	0	8	8	537	523	528	536	"

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
London, Ont.	Coal Gas and Carburetted			
City Gas Company.	Water Gas.	9,984	Apr., 1916..	12
	"		May., 1916..	12
	"		June, 1916..	15
	"		July, 1916..	12
	"		Aug., 1916..	12
	"		Sept., 1916..	15
	"		Oct., 1916..	12
	"		Nov., 1916..	12
	"		Dec., 1916..	12
	"		Jan., 1917..	12
	"		Feb., 1917..	12
	"		Mar., 1917..	12
Montreal, P.Q.	Coal Gas and Carburetted			
Montreal Lt. Ht. & Pr. Co.	Water Gas.	107,903	Apr, 1916...	12
	"		May, 1916..	12
	"		June, 19 6..	15
	"		July, 1916..	12
	"		Aug., 1916..	12
	"		Sept., 1916..	15
	"		Oct., 1916..	12
	"		Nov., 1916..	26
	"		Dec., 1916..	25
	"		Jan. 1917..	26
	"		Feb., 1917..	24
	"		Mar., 1917..	27
Nanaimo, B.C.	Coal Gas.	306	Apr., 1916..	2
Nanaimo City Gas Co.	"		May, 1916..	2
	"		June, 1916..	2
	"		July, 1916..	2
	"		Aug., 1916..	2
	"		Sept., 1916..	3
	"		Oct., 1916..	2
	"		Nov., 1916..	2
	"		Dec., 1916..	2
	"		Jan., 1917..	2
	"		Feb., 1917..	2
	"		M.r., 1917..	2
Napanee, Ont.	Coal Gas.	341	Apr., 1916..	2
Napanee Gas Co. to Sept., 1916, since then The Hydro-Electric Power Commission of Ontario.	"		May, 1916..	2
	"		June, 1916..	2
	"		July, 1916..	2
	"		Aug., 1916..	2
	"		Sept., 1916..	3
	"		Oct., 1916..	2
	"		Nov., 1916..	2
	"		Dec., 1916..	2
	"		Jan., 1917..	2
	"		Feb., 1917..	2
	"		Mar., 1917..	2
Nelson, B.C.	Coal Gas.	675		
Corporation of Nelson.				

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
12	0	12	12	563	532	549		None.
12	0	12	12	571	539	555		"
12	0	15	12	584	549	554		"
15	0	12	15	575	528	552		"
12	0	12	12	563	516	551		516
15	0	15	15	580	550	561		None.
12	0	12	12	572	533	549		"
12	0	12	12	554	530	541		"
12	0	12	12	551	527	539		"
12	0	12	12	577	533	547		"
12	0	12	12	552	536	542		"
12	0	12	12	576	526	543	549	"
13	0	23	23	578	521	535		None.
14	0	26	26	545	521	530		"
13	0	25	25	550	520	527		"
13	0	25	25	537	520	523		"
13	0	27	27	532	520	522		"
13	0	25	25	539	520	523		"
13	0	25	25	528	520	521		"
13	0	26	26	528	520	521		"
25	0	25	25	523	520	520		"
26	0	26	26	522	520	521		"
24	0	24	24	522	520	520		"
27	0	27	27	525	520	522	524	"
2	0	2	2	588	574	581		None.
2	0	2	2	589	571	580		"
2	0	2	2	590	590	590		"
2	0	2	2	575	573	574		"
2	0	2	2	599	583	591		"
2	0	3	2	581	572	577		"
2	0	2	2	559	551	555		"
2	0	2	2	551	549	550		"
2	0	2	2	577	535	556		"
2	0	2	2	581	539	560		"
2	0	2	2	613	585	599		"
2	0	2	2	568	559	564	573	"
2	0	2	2	592	544	568		None.
2	0	2	2	605	605	605		"
2	0	2	2	601	568	585		"
2	0	2	2	634	620	627		"
3	0	2	3	629	609	620		"
2	0	3	2	591	589	590		"
2	0	2	2	570	527	548		"
2	0	2	2	592	562	577		"
2	0	2	2	580	567	573		"
2	0	2	2	546	521	533		"
2	0	2	2	573	528	550		"
2	0	2	2	521	491	506	574	491

Testing apparatus not yet installed.

STATEMENT of Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
New Westminster, B.C.	Coal Gas	439	Apr., 1916	2
New Westminster Gas Co.	"		May, 1916	2
	"		June, 1916	2
	"		July, 1916	2
	"		Aug., 1916	2
	"		Sept., 1916	3
	"		Oct., 1916	2
	"		Nov., 1916	2
	"		Dec., 1916	2
	"		Jan., 1917	2
	"		Feb., 1917	2
	"		Mar., 1917	2
Oshawa, Ont.	Carburetted Water Gas	1,138	Apr., 1916	4
City Gas Co. to Sept., 1916, since then, The Hydro-Electric Power Commission of Ontario.	"		May, 1916	4
	"		June, 1916	5
	"		July, 1916	4
	"		Aug., 1916	4
	"		Sept., 1916	5
	"		Oct., 1916	4
	"		Nov., 1916	4
	"		Dec., 1916	4
	"		Jan., 1917	4
	"		Feb., 1917	4
	"		Mar., 1917	4
Ottawa, Ont.	Coal Gas	13,479	Apr., 1916	12
Ottawa Gas Co.	"		May, 1916	12
	"		June, 1916	15
	"		July, 1916	12
	"		Aug., 1916	12
	"		Sept., 1916	15
	"		Oct., 1916	12
	"		Nov., 1916	25
	"		Dec., 1916	25
	"		Jan., 1917	26
	"		Feb., 1917	23
	"		Mar., 1917	27
Owen Sound, Ont.	Coal Gas	1619	Apr., 1916	4
Corporation of Owen Sound.	"		May, 1916	4
	"		June, 1916	5
	"		July, 1916	4
	"		Aug., 1916	4
	"		Sept., 1916	5
	"		Oct., 1916	4
	"		Nov., 1916	4
	"		Dec., 1916	4
	"		Jan., 1917	4
	"		Feb., 1917	4
	"		Mar., 1917	4

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard
Made.		Prescribed.	Made.			Monthly.	Yearly.	
2	0	2	2	646	642	644		None.
2	0	2	2	649	643	646		"
2	0	2	2	649	631	640		"
2	0	2	2	673	649	661		"
2	0	2	2	680	674	677		"
2	0	3	2	650	647	649		"
2	0	2	2	661	604	632		"
2	0	2	2	685	638	662		"
2	0	2	2	696	686	691		"
2	0	2	2	679	678	679		"
2	0	2	2	687	680	683		"
2	0	2	2	669	663	666	661	"
4	0	4	4	559	543	549		None.
4	0	4	4	568	534	559		"
5	0	5	5	570	546	559		"
4	0	4	4	567	529	547		"
5	0	4	5	567	549	560		"
4	1	5	4	585	523	550		"
4	0	4	4	552	485	524		485
4	1	4	4	546	527	536		None.
4	1	4	4	551	524	537		"
4	1	4	4	541	526	531		"
4	2	4	4	548	530	540		"
4	2	4	4	547	504	531	544	504
12	0	23	23	557	525	537		None.
12	0	26	26	550	524	535		"
15	0	24	24	560	535	546		"
12	0	25	25	556	523	539		"
12	0	26	26	555	523	536		"
15	0	25	25	554	522	535		"
12	0	25	25	567	526	539		"
12	0	25	25	567	521	534		"
25	0	25	25	548	521	535		"
26	0	26	26	550	522	533		"
23	0	23	23	552	523	532		"
27	0	27	27	554	520	534	536	"
4	0	4	4	607	574	593		None.
4	0	4	4	611	553	590		"
5	0	5	5	601	555	577		"
4	0	4	4	583	548	566		"
5	0	4	5	604	557	578		"
4	0	5	4	603	573	588		"
4	0	4	4	615	544	580		"
4	0	4	4	570	524	548		"
4	0	4	4	567	529	550		"
4	0	4	4	571	542	560		"
4	0	4	4	610	543	579		"
4	0	4	4	559	554	556	572	"

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
Peterboro, Ont.	Carburetted Water Gas.	2,067	Apr., 1916.	4
Peterboro Light & Power Co., to June 1916, since then. The Hydro-Electric Power Commission of Ontario.	"		May, 1916.	4
	"		June, 1916.	5
	"		July, 1916.	4
	"		Aug., 1916.	4
	"		Sept., 1916.	5
	"		Oct., 1916.	4
	"		Nov., 1916.	4
	"		Dec., 1916.	4
	"		Jan., 1917.	4
	"		Feb., 1917.	4
	"		Mar., 1917.	4
Port Hope, Ont.	Coal Gas	415	Apr., 1916.	2
Port Hope Gas Co.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2
Quebec, P.Q.	Carburetted Water Gas.	6,035	Apr., 1916.	8
Quebec Ry. Lt. & Pr. Co.	"		May, 1916.	8
	"		June, 1916.	10
	"		July, 1916.	8
	"		Aug., 1916.	8
	"		Sept., 1916.	10
	"		Oct., 1916.	8
	"		Nov., 1916.	12
	"		Dec., 1916.	12
	"		Jan., 1917.	12
	"		Feb., 1917.	12
	"		Mar., 1917.	12
St. Hyacinthe, P.Q.	Carburetted Water Gas.	555	Apr., 1916.	2
La Cie. du Gaz Electricité et Pouvoir.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
4	1	4	4	556	537	547		None.
4	1	4	4	567	559	563		"
5	1	5	5	568	559	563		"
4	0	4	4	576	561	568		"
5	0	4	5	583	568	575		"
4	0	5	4	568	561	565		"
4	1	4	4	560	549	555		"
4	0	4	4	562	548	553		"
4	1	4	4	552	551	552		"
4	0	4	4	547	541	544		"
4	0	4	4	550	543	545		"
4	1	4	4	550	539	547	556	"
2	0	2	2	653	621	637		None.
2	0	2	2	641	609	625		"
2	0	2	2	658	655	657		"
2	0	2	2	626	623	625		"
3	0	2	3	642	573	558		"
2	0	3	2	650	645	648		"
2	0	2	2	643	640	642		"
2	0	2	2	650	582	616		"
2	0	2	2	652	622	637		"
2	0	2	2	630	598	614		"
2	0	2	2	591	582	587		"
2	0	2	2	662	644	653	625	"
8	0	12	12	587	551	577		None.
9	0	12	14	586	544	572		"
9	0	15	13	572	548	563		"
8	0	12	12	579	530	565		"
9	0	12	14	586	549	567		"
9	0	15	13	576	541	565		"
9	0	12	13	591	554	576		"
8	0	12	12	588	559	573		"
9	0	12	13	592	560	581		"
12	0	12	12	591	556	577		"
12	0	12	12	596	553	568		"
12	0	12	12	595	564	581	572	"
2	1	2	2	612	546	579		None.
2	2	2	2	584	570	577		"
2	2	2	2	525	522	523		"
2	1	2	2	541	464	503		464
2	1	2	2	527	520	524		None.
2	0	3	2	530	525	528		"
2	2	2	2	523	520	521		"
2	1	2	2	522	520	521		"
2	0	2	2	540	520	530		"
2	0	2	2	540	520	530		"
2	0	2	2	523	521	522		"
2	0	2	2	534	521	527	532	"

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
St. John, N.B.	Coal Gas	1,784	Apr., 1916	4
St. John Ry. Co.	"		May, 1916	4
	"		June, 1916	5
	"		July, 1916	4
	"		Aug., 1916	4
	"		Sept., 1916	5
	"		Oct., 1916	4
	"		Nov., 1916	4
	"		Dec., 1916	4
	"		Jan., 1917	4
	"		Feb., 1917	4
	"		Mar., 1917	4
St. Thomas, Ont.	Coal Gas	3,236	Apr., 1916	4
Corporation of St. Thomas.	"		May, 1916	4
	"		June, 1916	5
	"		July, 1916	4
	"		Aug., 1916	4
	"		Sept., 1916	5
	"		Oct., 1916	4
	"		Nov., 1916	8
	"		Dec., 1917	8
	"		Jan., 1917	8
	"		Feb., 1917	8
	"		Mar., 1917	8
Sherbrooke, P.Q.	Carburetted Water Gas	974	Apr., 1916	2
Corporation of Sherbrooke.	"		May, 1916	2
	"		June, 1916	2
	"		July, 1916	2
	"		Aug., 1916	2
	"		Sept., 1916	3
	"		Oct., 1916	2
	"		Nov., 1916	2
	"		Dec., 1916	2
	"		Jan., 1917	2
	"		Feb., 1917	2
	"		Mar., 1917	2
Sorel, P.Q.	Coal Gas	215		
Corporation of Sorel.				
Stratford, Ont.	Coal Gas and Carburetted			
Stratford Gas Co.	Water Gas.	1,341	Apr., 1916	4
	"		May, 1916	4
	"		June, 1916	5
	"		July, 1916	4
	"		Aug., 1916	4
	"		Sept., 1916	5
	"		Oct., 1916	4
	"		Nov., 1916	4
	"		Dec., 1916	4
	"		Jan., 1917	4
	"		Feb., 1917	4
	"		Mar., 1917	4

SESSIONAL PAPER No. 13

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests.	Times found present.	Number of Tests.		Highest B.T.U.	Lowest B.T.U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
4	0	4	4	596	576	591		None.
4	0	4	4	603	591	598		"
4	0	5	4	588	563	573		"
4	0	4	4	572	556	562		"
4	0	4	4	592	581	587		"
4	0	5	4	597	583	589		"
4	0	4	4	595	587	591		"
4	0	4	4	605	590	596		"
4	0	4	4	607	569	586		"
4	0	4	4	604	592	600		"
4	0	4	4	623	592	602		"
4	0	4	4	619	574	599	590	"
8	0	8	8	650	610	628		None.
8	0	8	8	660	616	640		"
8	0	10	8	658	622	643		"
10	0	8	10	655	613	635		"
8	0	8	8	655	635	644		"
10	0	10	10	680	636	654		"
8	0	8	8	666	594	621		"
8	0	8	8	634	563	601		"
8	0	8	8	629	599	616		"
8	0	8	8	631	573	603		"
8	0	8	8	642	577	605		"
8	0	8	8	608	538	582	623	"
2	2	2	2	637	618	628		None.
2	2	2	2	702	681	692		"
2	2	2	2	643	604	623		"
2	2	2	2	596	530	563		"
2	2	2	2	673	664	668		"
2	2	3	2	673	613	643		"
2	2	2	2	754	673	714		"
2	2	2	2	799	619	709		"
2	0	2	10	598	561	577		"
2	0	2	4	584	548	566		"
2	0	2	4	549	540	544		"
2	1	2	4	584	542	563	624	"

Testing apparatus not yet installed.

4	0	4	4	650	570	602		None.
4	0	4	4	613	571	596		"
4	0	5	4	581	567	575		"
5	0	4	5	645	560	599		"
4	0	4	4	636	560	603		"
5	0	5	5	611	526	585		"
4	0	4	4	632	559	599		"
4	0	4	4	586	511	550		511
4	0	4	4	621	570	591		None.
4	0	4	4	608	536	571		"
4	0	4	4	565	535	546		"
4	0	4	4	592	534	566	582	"

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
Toronto, Ont.	Coal Gas and Carburetted			
Consumers Gas Co.	Water Gas.	104,235	Apr., 1916.	12
	"		May, 1916.	12
	"		June, 1916.	15
	"		July, 1916.	12
	"		Aug., 1916.	12
	"		Sept., 1916.	15
	"		Oct., 1916.	12
	"		Nov., 1916.	26
	"		Dec., 1916.	25
	"		Jan., 1917.	26
	"		Feb., 1917.	24
	"		Mar., 1917.	27
Vancouver, B.C.	Coal Gas and Carburetted			
Vancouver Gas Co.	Water Gas.	16,827	Apr., 1916.	12
	"		May, 1916.	12
	"		June, 1916.	15
	"		July, 1916.	12
	"		Aug., 1916.	12
	"		Sept., 1916.	15
	"		Oct., 1916.	12
	"		Nov., 1916.	25
	"		Dec., 1916.	25
	"		Jan., 1917.	26
	"		Feb., 1917.	24
	"		Mar., 1917.	27
Victoria, B.C.	Coal Gas.	3,247	Apr., 1916.	4
Victoria Gas Co.	"		May, 1916.	4
	"		June, 1916.	5
	"		July, 1916.	4
	"		Aug., 1916.	4
	"		Sept., 1916.	5
	"		Oct., 1916.	4
	"		Nov., 1916.	8
	"		Dec., 1916.	8
	"		Jan., 1917.	8
	"		Feb., 1917.	8
	"		Mar., 1917.	8
Waterloo, Ont.	Carburetted Water Gas.	733	Apr., 1916.	2
Corporation of Waterloo.	"		May, 1916.	2
	"		June, 1916.	2
	"		July, 1916.	2
	"		Aug., 1916.	2
	"		Sept., 1916.	3
	"		Oct., 1916.	2
	"		Nov., 1916.	2
	"		Dec., 1916.	2
	"		Jan., 1917.	2
	"		Feb., 1917.	2
	"		Mar., 1917.	2

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he Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
f Tests.	Time found present.	Number of Tests.		Highest B. T. U.	Lowest B. T. U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
15	0	24	24	580	546	559		None.
12	0	26	26	580	527	562		"
15	0	25	25	586	561	566		"
12	0	25	25	581	547	565		"
12	0	26	26	591	542	559		"
15	0	25	25	570	542	559		"
12	0	25	25	559	536	548		"
22	0	26	26	564	542	553		"
25	0	25	25	561	542	552		"
26	0	26	26	559	532	541		"
24	0	24	24	549	530	538		"
27	0	27	27	562	530	546	554	"
12	0	23	23	576	513	535		513
12	0	26	26	555	522	539		None.
15	0	25	25	576	521	538		"
12	0	25	25	561	517	538		517 518
12	0	27	27	553	521	539		None.
15	0	25	25	555	502	533		502
12	0	25	25	555	511	539		511
21	0	25	25	551	520	533		None.
25	0	25	25	546	520	532		"
26	0	26	26	544	520	531		"
24	0	24	24	560	513	529		513 519
27	0	27	27	552	522	535	535	None.
4	0	8	8	594	532	556		None.
4	0	8	8	553	527	539		"
4	0	10	9	571	529	547		"
4	0	8	9	560	537	548		"
4	0	8	8	545	521	531		"
4	0	10	8	537	520	529		"
4	0	8	8	550	520	529		"
8	0	8	8	563	528	549		"
8	0	8	8	561	521	544		"
8	0	8	8	552	531	540		"
8	0	8	8	551	530	541		"
8	0	8	8	530	521	526	540	"
2	0	2	2	583	541	562		None.
3	0	2	2	560	526	543		"
2	0	2	2	593	543	568		"
3	0	2	2	604	556	580		"
2	0	2	2	548	520	534		"
3	0	3	3	549	528	541		"
2	0	2	2	617	573	595		"
2	0	2	2	531	526	529		"
2	0	2	2	545	536	541		"
2	0	2	2	527	525	526		"
2	0	2	2	528	528	528		"
2	0	2	2	551	533	542	549	"

STATEMENT of the Coal and Water Gas Companies registered and the Fiscal Year ended

Place and Company.	Kind of Gas.	Number of Meters.	Sulphuretted Hydrogen per	
			Month.	Number Prescribed.
Winnipeg, Man.	Coal Gas.	19,304	Apr., 1916	12
Winnipeg Electric Ry. Co.	"		May, 1916	12
	"		June, 1916	15
	"		July, 1916	12
	"		Aug., 1916	12
	"		Sept., 1916	15
	"		Oct., 1916	12
	"		Nov., 1916	25
	"		Dec., 1916	25
	"		Jan., 1917	26
	"		Feb., 1917	24
	"		Mar., 1917	27
Yarmouth, N.S.	Coal Gas.	291	Apr., 1916	2
Yarmouth Fuel Gas Co.	"		May, 1916	2
	"		June, 1916	2
	"		July, 1916	2
	"		Aug., 1916	2
	"		Sept., 1916	3
	"		Oct., 1916	2
	"		Nov., 1916	2
	"		Dec., 1916	2
	"		Jan., 1917	2
	"		Feb., 1917	2
	"		Mar., 1917	2

ORMOND HIGMAN,
Chief Engineer.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

the Calorimetric and Sulphuretted Hydrogen Tests made during March 31, 1917.

Tests (No Trace mitted.)		Calorimetric Values—(Standard 520 British Thermal Units.)						
of Tests	Times found present.	Number of Tests.		Highest B. T. U.	Lowest B. T. U.	Average B.T.U.		Readings below Standard.
Made.		Prescribed.	Made.			Monthly.	Yearly.	
12	0	23	23	578	542	56		None.
15	0	26	26	572	526	550		"
12	0	25	25	582	521	543		"
15	0	25	25	565	517	540		517
12	1	26	28	592	525	544		None.
12	0	25	25	563	520	539		"
15	0	25	25	588	523	549		"
12	0	25	25	565	525	544		"
15	0	25	29	581	521	542		"
14	0	26	29	571	520	542		"
12	0	24	24	548	526	531		"
13	0	27	27	572	528	554	545	"
2	0	2	2	596	591	594		None.
2	0	2	2	571	541	556		"
3	0	2	2	544	523	534		"
2	1	2	3	569	532	546		"
2	0	2	2	620	607	614		"
2	0	3	2	562	523	543		"
2	0	2	2	556	532	544		"
2	1	2	2	591	524	558		"
2	0	2	2	601	576	588		"
2	0	2	2	660	645	652		"
2	0	2	2	670	659	665		"
2	0	2	2	662	641	652	587	"

J. U. VINCENT,
Deputy Minister.

APPENDIX

STATEMENT of Gas Meters tested during

District.	10 Light Tin and No. 1 Iron Meters.					11 to 50 Light Tin and No. 2 Iron Meters.					No. 3 Iron Meters.				
	Verified as within legal limits.			Rejected.		Verified as within legal limits.			Rejected.		Verified as within legal limits.			Rejected.	
	Correct.	Not over 2% fast.	Not over 3% slow	Over 2% Fast.	Over 3% slow.	Correct.	Not over 2% fast.	Not over 3% slow	Over 2% fast.	Over 3% slow.	Correct.	Not over 2% fast.	Not over 3% slow	Over 2% fast.	Over 3% slow.
Belleville	417	318	967	8	17	6	5	14	0	0	0	0	0	0	0
Calgary	124	86	1,037	28	4	1	4	19	5	1	2	0	0	1	0
Charlottetown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Halifax	184	88	189	0	0	12	8	8	0	0	0	0	0	0	0
Hamilton	3,258	601	3,678	0	1	66	15	80	0	0	4	0	8	0	0
London	2,132	1,053	4,517	34	30	18	17	65	3	2	8	2	17	0	0
Montreal	6,026	5,110	8,347	142	158	54	35	81	0	0	0	0	0	0	0
Ottawa	592	834	1,407	0	0	4	21	14	0	0	0	0	0	0	0
Quebec	474	72	416	0	0	2	2	5	0	0	0	0	0	0	0
St. Hyacinthe	13	3	16	0	2	0	0	0	0	0	0	0	0	0	0
St. John	427	19	269	1	0	4	1	6	1	0	2	0	2	0	0
Sherbrooke	89	55	76	0	0	0	1	2	0	0	0	0	0	0	0
Toronto	9,035	2,451	9,306	73	84	215	34	220	1	2	0	0	0	0	0
Vancouver	809	859	737	3	1	16	16	39	0	1	0	0	0	0	0
Victoria	241	260	223	0	2	15	18	20	0	0	0	0	0	0	0
Winnipeg	1,768	572	833	6	4	10	5	2	1	0	0	0	0	0	0
Totals	25,589	12,381	32,018	295	303	423	182	575	11	6	16	2	27	1	0

ORMOND HIGMAN,
Chief Engineer.

DEPARTMENT OF INLAND REVENUE,
OTTAWA, July 2, 1917.

SESSIONAL PAPER No. 13

F.

the Fiscal Year ended March 31, 1917.

51 to 100 Light Tin Meters.					Larger Tin Meters.					Larger Iron Meters.					Totals.
Verified as within legal limits.			Rejected.		Verified as within legal limits.			Rejected.		Verified as within legal limits.			Rejected.		
Correct.	Not over 2% fast.	Not over 3% slow	Over 2% fast.	Over 3% slow.	Correct.	Not over 2% fast.	Not over 3% slow	Over 2% fast.	Over 3% slow.	Correct.	Not over 2% fast.	Not over 3% slow	Over 2% fast.	Over 3% slow.	
0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	1,757
0	0	0	0	0	0	0	0	0	0	0	1	16	0	0	1,329
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	489
5	2	8	0	0	0	0	0	0	0	18	2	22	0	0	7,768
4	2	7	0	5	0	0	0	0	0	14	10	66	1	4	8,011
23	36	20	0	0	0	0	0	0	0	0	0	0	0	0	20,032
0	6	6	0	0	0	1	0	0	0	0	0	0	0	0	2,885
0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	973
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	732
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	223
14	8	23	1	0	10	0	6	0	0	0	0	0	0	0	21,483
0	2	5	0	0	0	0	1	0	0	0	0	0	0	0	2,489
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	779
1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3,203
47	59	72	1	5	11	2	7	0	0	32	13	104	1	4	72,187

J. U. VINCENT,
Deputy Minister.

STATEMENT of Natural Gas Companies registered during the Fiscal Year ended March 31, 1917.

Location.	Name.	Number of Meters.
Brantford, Ont.	Brantford Gas Co.	5,011
Brooks, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	68
Cainsville, Ont.	Standard Natural Gas Co.	83
Caledonia, Ont.	Port Colborne-Welland Natural Gas & Oil Co.	442
Calgary, Alta.	Calgary Gas Co.	6,689
Castor, Alta.	Corporation of Castor.	45
Chatham, Ont.	Chatham Gas Co.	3034
Claresholm, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	124
Ford, Ont.	Windsor Gas Co.	331
Galt, Ont.	Dominion Natural Gas Co.	1868
Granum, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	83
Hamilton, Ont.	Manufacturers Natural Gas Co.	22
Hamilton, Ont.	United Gas & Fuel Co.	17,304
Hillsboro, N.B.	Moncton Tramways Electricity & Gas Co.	233
Ingersoll, Ont.	Ingersoll Gas Light Co.	967
Lethbridge, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	502
MacLeod, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	155
Medicine Hat, Alta.	Corporation of Medicine Hat.	2456
Moncton, N.B.	Moncton Tramways Electricity & Gas Co.	2240
Nanton, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	110
Okotoks, Alta.	Canadian Western Natural Gas, Light, Heat & Power Co.	98
Port Colborne, Ont.	Sterling Gas Co.	945
Redcliff, Alta.	Redcliff Light & Power Co.	275
Ridgeway, Ont.	Bertie Natural Gas Co.	175
Rose Hill, Ont.	Rose Hill Natural Gas Co.	38
St. Catharines, Ont.	Corporation of St. Catharines.	467
Sandwich, Ont.	Windsor Gas Co.	429
Sarnia, Ont.	Sarnia Gas & Electric Light Co.	3094
Suffield, Alta.	Southern Alberta Gas Co.	50
Walkerville, Ont.	Windsor Gas Co.	1184
Windsor, Ont.	Windsor Gas Co.	5320
Woodstock, Ont.	Woodstock Gas Light Co.	1855

ORMOND HIGMAN,
Chief Engineer.

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMEENT,
OTTAWA, July 2, 1917.

APPENDIX G.

STATEMENT of Electric Light Expenditures and Revenues for the fiscal year ended March 31, 1917.

Districts.	Inspectors.	Expenditures.						Revenues.
		Salaries.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.	Total.	
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Belleville	Fraser, H.	1,499 88	1,035 96		287 90	49 41	2,873 15	2,216 40
Fort William	Little, E.	1,399 92	30 00		220 60	105 93	1,756 45	979 50
Hamilton	Lutz, H.				462 00		462 00	4,499 70
London	Nash, A. F.		249 99		533 55	45 48	829 02	6,523 95
Ottawa	Kinsman, A. E.				224 00		224 00	4,568 20
Sudbury	Bonskill, L. H.	115 58	497 29		1,098 11	54 18	1,765 16	1,558 20
Toronto	Stiver, J. L.				741 80	42 10	783 90	11,363 40
Special	Kinsman, E. A.	750 00					750 00	
	Ontario	3,765 38	1,813 24		3,567 96	297 10	9,443 68	31,709 35
Montreal	Aubin, A.		2,273 79		337 40	64 79	2,675 98	13,675 15
Quebec	Cantin, J. A.		2,154 94	611 25	449 65	183 46	3,399 30	2,489 05
Sherbrooke	Simpson, A. F.				182 05	45 80	227 85	903 35
St. Hyacinthe	Aubin, A., Act'g.							927 40
Three Rivers	Oliver, A.	499 92		180 00	285 80	12 85	978 57	862 15
	Quebec	499 92	4,428 73	791 25	1,254 90	306 90	7,281 70	18,857 10
St. John, N.B.	Wilson, J. E.		12 00		298 68	44 33	355 01	1,848 15
Halifax, N. S.	Toale, John		60 00		997 20	272 97	1,330 17	2,053 65
Charlottetown, P.E.I.	Bell, J. H.		60 00		70 30	17 46	147 76	198 00
Winnipeg, Man.	Hamilton, R.			533 10	185 10	123 10	841 30	2,887 90
Regina, Sask.	Hunter, W, M.	2,300 06			1,146 70	171 40	3,618 16	2,019 80
Calgary	Kyle, W. P.	1,500 00	514 98		277 60	110 70	2,403 28	1,926 70
Edmonton	Cantin, A. J.	1,299 96			282 45	117 80	1,700 21	885 90
	Alberta	2,799 96	514 98		560 05	228 50	4,103 79	2,812 60
Vancouver	Stott, John.	7,077 38	900 00		369 90	205 62	8,552 90	6,793 15
Victoria	Dresser, F.		44 00		150 10	111 59	305 69	1,935 90
	British Columbia	7,077 38	944 00		520 00	317 21	8,858 59	8,729 05
Dawson, Yukon.	Stingle, J. W.	499 92					499 92	
Chief Electrical Engineer					224 45	350 15	574 60	
Inspector of Eastern Division								
Inspector of Western Division		2,599 92			359 85	242 17	3,201 94	
Total for Inspectors		19,542 54	7,832 95	1,324 35	9,185 19	2,371 29	40,256 32	71,115 60

APPENDIX G—*Concluded.*

STATEMENT of Electric Light Expenditures and Revenues for the fiscal year ended March 31, 1917—*Concluded.*

—	Expenditures.						Revenues.
	Salaries.	Special Assistance.	Rent.	Travelling Expenses.	Sundries.	Total.	
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
General Contingencies					3,657 72	3,657 72	
Printing					236 56	236 56	
Stationery					45 80	45 80	
International Electro-Technical Commission							
Provisional Allowance					2,286 44	2,286 44	
Export of Electric Power							250 00
Electric Laboratory							101 58
Grand Totals	19,542 54	7,832 95	1,324 35	9,185 19	8,597 81	46,482 84	71,467 18

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

J. U. VINCENT,
Deputy Minister.

APPENDIX H.

APPENDIX

STATEMENT of Electric Meters tested during

District.	Class 1 Meters (2 wire, 1 to 250 volts.)					Class 2 Meters (3 wire & polyphase, 1 to 250 volts.)				
	Verified as within legal limits.			Rejected.		Verified as within legal limits.			Rejected.	
	Correct.	Not over 3% fast.	Not over 3% slow	Over 3% fast.	Over 3% slow.	Correct.	Not over 3% fast.	Not over 3% slow	Over 3% fast.	Over 3% slow.
Belleville	525	1,803	681	0	0	112	285	89	0	0
Calgary	1,404	1,289	141	3	40	134	108	8	1	3
Charlottetown	127	82	75	1	5	17	7	8	0	0
Edmonton	543	759	36	0	1	46	52	8	0	0
Ft. William	155	1,038	290	1	1	13	45	46	0	0
Halifax	1,521	1,396	242	16	9	92	69	18	0	1
Hamilton	4,618	927	752	0	0	549	63	126	0	0
London	4,069	2,882	2,420	1	0	297	338	264	0	0
Montreal	6,964	11,314	3,939	0	2	4	1	0	0	0
Ottawa	1,142	3,838	2,227	0	0	14	72	39	1	0
Quebec	2,917	567	452	0	2	3	0	14	0	0
Regina	507	2,148	598	5	5	9	55	15	1	0
St. John	1,220	831	872	5	6	39	23	45	0	2
St. Hyacinthe	1,023	235	216	0	0	9	0	1	0	0
Sherbrooke	426	372	608	0	0	1	4	2	0	0
Sudbury	466	1,328	616	2	5	29	62	19	0	2
Three Rivers	1,132	92	76	4	0	14	1	0	0	0
Toronto	8,238	5,158	1,878	6	19	1,189	457	50	6	2
Vancouver	3,538	5,223	1,824	5	4	97	216	69	0	1
Victoria	1,413	1,165	468	1	2	36	34	16	0	0
Winnipeg	1,760	1,811	301	0	2	181	186	31	0	0
Yukon	0	0	0	0	0	0	0	0	0	0
Totals	43,708	44,258	18,712	50	103	2,885	2,069	868	9	11

ORMOND HIGMAN,
Chief Engineer.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

H.

the Fiscal Year ended March 31, 1917.

Class 3 Meters (251 to 650 volts).					Class 4 Meters (over 650 volts.)					Totals.
Verified as within legal limits.			Rejected.		Verified as within legal limits.			Rejected.		
Correct.	Not over 3% fast.	Not over 3% slow	Over 3% fast.	Over 3% slow.	Correct.	Not over 3% fast.	Not over 3% slow	Over 3% fast.	Over 3% slow.	
3	21	7	0	0	0	0	0	0	0	3,526
2	1	1	0	0	0	0	0	0	0	3,135
0	0	0	0	0	0	0	0	0	0	322
0	2	0	0	0	0	0	0	0	0	1,447
0	2	3	0	0	0	0	0	0	0	1,594
3	7	0	0	0	0	0	0	0	0	3,365
74	9	29	0	0	0	0	0	0	0	7,147
45	72	34	0	0	0	0	0	0	0	10,422
32	46	148	0	0	0	0	0	0	0	22,450
10	56	29	0	0	0	0	0	0	0	7,428
57	13	5	0	0	0	0	0	0	0	4,030
10	0	0	0	0	0	0	0	0	0	3,343
1	0	3	0	0	0	0	0	0	0	3,047
9	8	2	0	0	0	1	0	0	0	1504
4	2	7	0	0	4	3	0	0	0	1,433
1	8	7	0	0	0	0	0	0	0	2,545
42	1	2	0	0	0	0	0	0	0	1,364
441	108	44	4	1	0	0	0	0	0	17,601
24	46	29	0	0	0	0	0	0	0	11,076
7	11	10	0	0	0	0	0	0	0	3,163
56	99	20	1	0	0	0	0	0	0	4,448
0	0	0	0	0	0	0	0	0	0	0
811	512	380	5	1	4	4	0	0	0	114,390

J. U. VINCENT,
Deputy Minister.

APPENDIX I.

STATEMENT showing the amount of Electrical Energy, Gas or Fluid generated or produced for export and for consumption in Canada, under the authority of the Electricity and Fluid Exportation Act, for the year ending March 31, 1917.

Name of Contractor and Place of Business.	Month.	Units Produced for export.		Units Produced for use in Canada.		Total Output of Generating Station or other Source.	
		K. W. Hours.	H. P. Years.	K. W. Hours.	H. P. Years.	K. W. Hours.	H. P. Years.
Canadian Niagara Power Company, Niagara Falls, Ont.	April	32,154,705	4,920·0	1,084,295	166·0	33,239,000	5,086·0
	May	35,748,225	5,470·0	843,775	129·0	36,592,000	5,599·0
	June	34,354,972	5,257·0	977,028	150·0	35,332,000	5,407·0
	July	32,862,444	5,029·0	2,046,556	313·0	34,909,000	5,342·0
	August	28,422,608	4,349·0	9,268,392	1,418·0	37,691,000	5,767·0
	September	26,059,060	3,988·0	15,382,940	2,354·0	41,442,000	6,342·0
	October	27,477,534	4,205·0	17,132,466	2,621·0	44,610,000	6,826·0
	November	24,907,855	3,811·0	21,782,145	3,333·0	46,690,000	7,144·0
	December	21,445,908	3,282·0	24,891,092	3,809·0	46,337,000	7,091·0
	January	17,431,343	2,667·0	24,793,657	3,794·0	42,225,000	6,461·0
	February	12,937,005	1,980·0	21,193,995	3,243·0	34,131,000	5,223·0
	March	21,425,820	3,279·0	25,974,180	3,975·0	47,400,000	7,254·0
	Totals	315,227,479	48,237·0	165,370,521	25,305·0	480,598,000	73,542·0
Toronto Power Company, Niagara Falls, Ont	April	6,306,000	965·0	38,044,300	5,822·0	44,350,300	6,787·0
	May	5,937,000	908·0	41,932,000	6,417·0	47,869,000	7,325·0
	June	5,767,000	882·0	45,721,500	6,996·0	51,488,500	7,878·0
	July	6,402,000	979·0	44,538,800	6,815·0	50,940,800	7,794·0
	August	11,782,000	1,803·0	45,684,800	6,991·0	57,466,800	8,794·0
	September	13,059,000	1,998·0	48,364,200	7,401·0	61,423,200	9,399·0
	October	13,164,100	2,011·0	51,809,200	7,926·0	64,973,300	9,937·0
	November	11,286,400	1,727·0	52,284,500	8,001·0	63,570,900	9,728·0
	December	11,560,700	1,769·0	52,441,800	8,025·0	64,002,500	9,794·0
	January	11,666,700	1,785·0	56,114,400	8,587·0	67,781,100	10,372·0
	February	10,330,100	1,587·0	51,281,400	7,847·0	61,611,500	9,434·0
	March	11,095,500	1,697·0	56,480,900	8,643·0	67,576,400	10,340·0
	Totals	118,356,500	18,111·0	584,697,800	89,471·0	703,054,300	107,582·0
Ontario Power Company, Niagara Falls, Ont.	April	14,763,420	2,259·0	59,747,380	9,143·0	74,510,800	11,402·0
	May	19,261,160	2,947·0	61,430,740	9,400·0	80,691,900	12,347·0
	June	23,476,040	3,592·0	56,541,460	8,652·0	80,017,500	12,244·0
	July	25,066,300	3,836·0	53,266,200	8,151·0	78,332,500	11,987·0
	August	29,008,240	4,439·0	49,609,560	7,591·0	78,617,800	12,030·0
	September	32,470,540	4,969·0	45,602,960	6,978·0	78,073,500	11,947·0
	October	31,953,520	4,890·0	52,754,480	8,073·0	84,708,000	12,963·0
	November	31,334,440	4,795·0	52,007,760	7,958·0	83,342,200	12,753·0
	December	32,569,180	4,984·0	52,453,920	8,027·0	85,023,100	13,011·0
	January	31,631,400	4,840·0	52,713,000	8,066·0	84,344,400	12,906·0
	February	27,021,700	4,135·0	47,839,900	7,321·0	74,861,600	11,456·0
	March	29,886,100	4,573·0	54,589,800	8,353·0	84,475,900	12,926·0
	Totals	328,442,040	50,259·0	638,557,160	97,713·0	966,999,200	147,972·0

APPENDIX I.—*Continued.*

STATEMENT showing the amount of Electrical Energy, Gas, or Fluid generated or produced for export and for consumption in Canada, under the authority of the Electricity and Fluid Exportation Act, for the year ending March 31, 1917.

Name of Contractor and Place of Business.	Month.	Units Produced for export.		Units Produced for use in Canada.		Total Output of Generating Station or other Source.	
		K. W. Hours.	H. P. Years.	K. W. Hours.	H. P. Years.	K. W. Hours.	H. P. Years.
Ontario and Minnesota Power Co.	April	1,151,030	176·1	957,260	146·5	2,108,290	322·6
	May	1,059,590	162·1	900,950	137·9	1,960,540	300·0
	June	888,660	136·0	783,750	119·9	1,672,410	255·9
	July	1,314,750	201·2	890,310	136·2	2,205,060	337·4
	August	1,811,350	277·2	1,083,970	165,5	2,895,320	442·7
	September	1,561,760	239·0	957,470	146·5	2,519,230	385·5
	October	1,784,470	273·1	1,086,210	166·2	2,870,680	439·3
	November	1,500,358	229·6	961,054	147·0	2,461,412	376·6
	December	1,460,749	223·5	882,071	135·0	2,342,820	358·5
	January	1,620,705	248·0	973,699	149·0	2,594,404	397·0
	February	1,433,540	219.4	848,760	129,9	2,282,300	349·3
	March	986,022	150·9	762,650	116·7	1,748,672	267·6
	Totals	16,572,984	2,536·1	11,088,154	1,696·3	27,661,138	4,232·4
Western Canada Power Company, Vancouver, B.C.	April	604,400	92·0	4,791,360	735·0	5,395,760	827·0
	May	709,240	109·0	5,002,380	765·0	5,711,620	874·0
	June	1,248,174	191·0	5,282,046	808·0	6,530,220	999·0
	July	1,367,514	209·0	5,548,766	849·0	6,916,280	1,058·0
	August	1,638,422	251·0	5,278,778	808·0	6,917,200	1,059·0
	September	1,887,510	289·0	5,074,220	776·0	6,961,730	1,065·0
	October	714,100	109·0	8,325,020	1,274·0	9,039·120	1,383·0
	November	830,000	127·0	8,761,720	1,341·0	9,591,720	1,468·0
	December	870,260	133·0	8,549,220	1,308·0	9,419,480	1,441·0
	January	589,100	90·0	8,690,270	1,330·0	9,279,370	1,420·0
	February	986,600	151·0	7,506,980	1,147·0	8,493,580	1,298·0
	March	2,247,500	344·0	5,985,450	916·0	8,232,950	1,260·0
	Totals	13,692,820	2,095·0	78,796,210	12,057·0	92,489,030	14,152·0
British Columbia Electric Railway Co., Vancouver, B.C.	April	19,026	3·0	5,569,874	852·0	5,588,900	855·0
	May	18,831	3·0	5,478,469	838·0	5,497,300	841·0
	June	16,214	2·0	5,167,686	791·0	5,183,900	793·0
	July	22,068	3·0	5,119,882	783·0	5,141,950	786·0
	August	19,437	3·0	5,743,963	879·0	5,763,400	882·0
	September	22,668	3·0	6,432,897	984·0	6,455,565	987·0
	October	29,602	5·0	4,102,098	628·0	4,131,700	633·0
	November	31,067	5·0	4,426,833	678·0	4,457,900	683·0
	December	36,491	5·0	3,955,109	605·0	3,991,600	610·0
	January	31,780	5·0	4,143,720	634·0	4,175,500	639·0
	February	25,447	4·0	4,096,753	627·0	4,122,200	631·0
	March	23,559	4·0	6,637,341	1,016·0	6,660,900	1,020·0
	Totals	296,190	45·0	60,874,625	9,315·0	61,170,815	9,360·0

APPENDIX I.—*Continued.*

STATEMENT showing amount of Electrical Energy, Gas, or Fluid generated or produced for export and for consumption in Canada, under the authority of the Electricity and Fluid Exportation Act, for the year ending March 31, 1917.

Name of Contractor and Place of Business.	Month.	Units Produced for export.		Units Produced for use in Canada.		Total Output of Generating Station or other Source.	
		K. W. Hours.	H. P. Years.	K. W. Hours.	H. P. Years.	K. W. Hours.	H. P. Years.
Maine and New Brunswick Electrical Power Company, Aroostook Falls, N.B.	April	228,949	35·0	22,151	3·0	251,100	38·0
	May	230,405	35·0	18,995	3·0	249,400	38·0
	June	233,375	36·0	19,925	3·0	253,300	39·0
	July	231,791	35·0	18,309	3·0	250,100	38·0
	August	257,567	40·0	16,333	2·0	273,900	42·0
	September	304,114	47·0	23,586	4·0	327,700	51·0
	October	230,678	35·0	29·122	5·0	259,800	40·0
	November	368,211	56·0	30,389	5·0	398,600	61·0
	December	379,818	58·0	27,382	4·0	407,200	62·0
	January	377,115	58·0	27,085	4·0	404,200	62·0
	February	354,931	54·0	26,469	4·0	381,400	58·0
	March	352,871	54·0	38,529	6·0	391,400	60·0
	Totals	3,549,825	543·0	298,275	46·0	3,848,100	589·0
Cedar Rapids Manufacturing and Power Company, Montreal, P.Q.	April	35,767,000	5,473·0	8,710,000	1,333·0	44,477,000	6,806·0
	May	39,297,000	6,013·0	9,280,000	1,420·0	48,577,000	7,433·0
	June	41,764,000	6,391·0	6,498,000	994·0	48,262,000	7,385·0
	July	44,052,000	6,741·0	6,874,000	1,052·0	50,926,000	7,793·0
	August	41,836,000	6,402·0	9,064,000	1,387·0	50,900,000	7,789·0
	September	41,024,000	6,278·0	9,262,000	1,417·0	50,286,000	7,695·0
	October	42,838,000	6,554·0	9,308,000	1,424·0	52,146,000	7,978·0
	November	42,213,000	6,460·0	8,740,000	1,337·0	50,953,000	7,797·0
	December	35,455,000	5,425·0	9,414,000	1,439·0	44,869,000	6,864·0
	January	24,563,000	3,759·0	9,068·000	1,387·0	33,631,000	5,146·0
	February	17,417,000	2,665·0	10,915,000	1,670·0	28,332,000	4,335·0
	March	22,164,000	3,392·0	17,819,000	2,730·0	39,983,000	6,122·0
	Totals	428,390,000	65,553·0	14,952,000	17,590·0	543,342,000	83,143·0
Sherbrooke Railway and Power Co., Sherbrooke, P.Q.	April	24,000	4·0	715,200	109·0	739,200	113·0
	May	25,080	4·0	765,600	117·0	790,680	121·0
	June	24,000	4·0	734,400	112·0	758,400	116·0
	July	22,080	3·0	738,240	113·0	760,320	116·0
	August	19,940	3·0	776,880	119·0	796,820	122·0
	September	19,680	3·0	764,400	117·0	784,080	120·0
	October	21,600	3·0	819,600	126·0	841,296	129·0
	November	22,920	3·0	798,360	122·0	821,280	125·0
	December	24,840	4·0	821,160	126·0	846,000	130·0
	January	23,640	4·0	791,640	121·0	815,280	125·0
	February	21,720	3·0	748,080	114·0	769,800	117·0
	March	24,000	4·0	828,480	127·0	852,480	131·0
	Totals	273,500	42·0	9,302,040	1,423·0	9,575,540	1,465·0

APPENDIX I.—*Concluded.*

RECAPITULATION.

Name of Contractor.	Units Produced for Export.		Units Produced for use in Canada.		Total Output of Generating Station or other Source.	
	K.W. Hours.	H.P. Years.	K.W. Hours.	H.P. Years.	K.W. Hours.	H.P. Years.
Canadian Niagara Power Co...	315,227,479	48,237	165,370,521	25,305	480,598,000	73,542
Toronto Power Co.....	118,356,500	18,111	584,697,800	89,471	703,054,300	107,582
Ontario Power Co.....	328,442,040	50,259	638,557,160	97,713	966,999,200	147,972
Ontario and Minnesota Power Co.....	16,572,984	2,536	11,088,154	1,696	27,661,138	4,232
Western Canada Power Co...	13,692,820	2,095	78,796,210	12,057	92,489,030	14,152
British Columbia Electric Railway Company.....	296,190	45	60,874,625	9,315	61,170,815	9,360
Maine and New Brunswick Electric Power Co.....	3,459,825	543	298,275	46	3,758,100	589
Cedars Rapids Manufacturing and Power Co.....	428,390,000	65,553	114,952,000	17,590	543,342,000	83,143
Sherbrooke Railway and Power Co.....	273,500	42	9,302,040	1,423	9,575,540	1,465
Totals.....	1,224,711,338	187,421	1,664,037,785	254,616	2,888,748,123	442,037

ORMOND HIGMAN,
Chief Engineer.
Gas and Electricity Inspection.

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, during the Fiscal Year Ended March 31, 1917.

District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Charlottetown, P.E.I.	Charlottetown Light and Power Co., Ltd.	Charlottetown	Gas and steam.	952	3	60	2,200	110/220	110	40	1,413
	Ives, C. W.	North Tryon	Water	15	.....	DC.	110	.....	110	.....	.....
	Kensington Electric Light Co., Ltd.	Kensington	Water	40	3	60	2,300	110	.....	.....	69
	Leard Electric Light and Power.	Alberton	Water	40	.....	60	2,200	220	110	.....	65
	Leard, Geo. E. & Son	Crapaud	Water	20	2	60	2,200	.....	110	.....	21
	Montague Electric Co., Ltd.	Montague	Water	44	1	60	2,200	.....	104	.....	61
	Sun Electric Co., Ltd.	Summerside	Gas and steam.	250	1	125	1,040	.....	110	.....	354
St. John, N.B.	Andover and Perth Electric Light Com.	Andover and Perth.	Purchased	.....	.....	.....	11,000	220	110	2	157
	Bathurst Electric and Water Power Co.	Bathurst	Water	1,000	3	66	6,600	220	110	7	266
	Canadian Cottons, Ltd.	Marysville	Steam	100	.....	60	2,200	.....	110	.....	126
	Campbellton Electric and Power Dept.	Campbellton	Gas	525	3	60	2,200	110/220	110	21	550
	Dalhousie, Town of	Dalhousie	Gas	125	3	.....	2,200	.....	110	.....	121
	Dorchester Electric and Power Co.	Dorchester	Steam	75	1	.....	2,040	.....	104	.....	104
	Eastern Electric and Development Co.	Sackville	Steam	.....	3	60	2,300	220	220	4	225
	Edmundston, Town of	Edmundston	Water	500	1	60	2,200	2,200	110	1	157
	Fredericton Gas Light Co.	Fredericton	Water	900	2	60	2,300	220	110	22	865
	King Lumber Co.	Chipman	Steam	70	.....	DC.	125	110	110	.....	23
	Light Dept. of town of Chatham.	Chatham	Oil	400	3	60	2,300	2,300	2,300	2	312
	Loggie, A. & R. Co., Ltd.	Northumberland	Steam	65	1	DC.	110	110	110	.....	.....
	Moncton Tramways Electric and Gas Co., Ltd.	Moncton	Steam	900	2	60	1,100	110–220/500	110	40	1,618
	Maine and N.B. Elec. Power Co., Ltd.	Arrostook Junction.	Hydro Elec.	3,500	3	60	11,000	550	110	1	44

	Newcastle, Town of	Newcastle	Steam	325	2	60	2,300	220	110	2	350
	New Brunswick Power Co	St. John	Steam	7,000	3	60	2,300	250	107	341	6,751
	Port Elgin Electric Light Co	Port Elgin	Steam	50		DC.	220	220	220		72
	Sherwood, C. M., Ltd	Centreville	Water	160					110		
	St. Leonard Electric Co., Ltd.	St. Leonard	Purchased				110	110	110	5	55
	St. Stephen Electric Light Co.	St. Stephen	Turbine	600	3	60	2,200	220	110	2	292
	Shediac Electric Light and Power Co.	Shediac	Water	108	3	60	2,200	110	110	1	85
	Grand Falls, Town of	Grand Falls	Purchased				2,200	220	110	3	125
	Woodstock Elec. Ry. Light and Power Co.	Woodstock	Turbine	250	3	60	2,300	2300/550 220/110	110	4	500
Halifax, N.S.	Annapolis Royal, Town of	Annapolis Royal	Turbine	240	2		2,500	104	104		3
	Antigonish Electric Co	Antigonish	Steam	115		DC.	115/230		115		136
	Acadia Electric Light Co	Wolfville	Steam and oil.	125+50	3	60	2,300		110		246
	Acadia Coal Co	Stellarton	Steam	5,000	3	50	3,150	3150/525	110		7
	Bridgewater, Town of	Bridgewater	Water	316	2	60	2,200		110		
	Bridgewater Electric Light and Power Co., Ltd.	Bridgewater	Water	175	1	60	2,300		110		
	Bear River and Digby Elec. Lt. H. and Power Co., Ltd.	Bear River	Water	70	3	60	2,200		110		
	Canso, Town of	Canso	Gas	95	3		2,300		110		155
	Canadian Electric Co., Ltd	Amherst	Steam	3,000		60	11,000	2,200–550/220	110–115/220	45	989
	Chambers Electric Light and Power Co., Ltd.	Truro	Steam	545			125	220	125	43	777
	Cape Briton Electric Co., Ltd.	Sydney	Steam	2,745	2	60	2,300	2300/220	2300/110	84	2,631
	Dominion, Town of	Dominion			1	25	22		110		159
	Dartmouth Gas, Electric Lt., H'g. and Power Co., Ltd.	Dartmouth	Purchased		3	60		220	110	4	651
	Daley, John	Digby		136			2,300		104		
	Dartmouth, Town of	Dartmouth	Water	50	3	60	2,200		110		
	Edison Electric Light and Power Co.	Springhill		500	1 & 2	60	2,080		104		83
	Glace Bay Electric Light Plant.	Glace Bay	Steam	600	2	60	2,200	110	110		595
	Hantsport, Town of	Hantsport	Steam	75	3		2,200		110		68
	Inverness Railway and Coal Co.	Inverness		75		DC.	125		125		
	Kentville Electric Light and Power Co , Ltd	Kentville	Steam	120	3	60	2,200		110		173
	Lawrencetown Electric Light Commission.	Lawrencetown	Purchased	40							
	Lunenburg Gas Co , Ltd	Lunenburg	Water	400	3	60	3,250		110		48
	Liverpool, Town of	Liverpool	Water	750	2	60	2,400	220	104		
	Mahone Water Commission	Mahone			1	60	2,300	220	110		40
	Middleton Electric Light Co	Middleton	Gas	66	3	60	2,300		110		140
	Nova Scotia Tramways and Power Co., Ltd.	Halifax	Steam	4,280	3	60	2,200	525 DC.	110	316	5,044
	Pictou, Municipality of	Pictou	Steam	450	2		2,300	500/220	110	6	400
	Pictou County Electric Co., Ltd.	Stellarton	Steam	1,125	3	60	2,300	110/220	104–108/112	63	1,487

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act.,—*Continued.*

District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lightirg.	Power.	Lighting.
Halifax, N.S —Con	Parrsboro Electric Light Plant	Parrsboro	Steam	140	1 & 2	133	2,200	.....	104	.....	72
	Sackville River Electric Co., Ltd.	Halifax	Turbine	50	3	60	2,300	.....	110	.....	70
	Shelburne, Town of	Shelburne	Water	400	3	60	2,300	220	110	.....	.....
	Sydney Mines Electric Co., Ltd.	Sydney Mines	Steam	400	2	60	2,200	220	220	5	509
	Stewiacke Electric Light and Power Co., Ltd.	Stewiacke	Steam	125	3	60	2,200	.....	110	.....	27
	Truro, Town of	Truro	Steam	75	3	60	2,300	.....	110	.....	4
	Waterford Public Utilities Co.	New Waterford	Purchased	.....	1	25	6,600	110/220	110	1	37
	Windsor Electric Light and Power Co., Ltd.	Windsor	Steam	455	1-2 1-3	66 60	1-1,140 1-1,105	.....	110	.....	375
	Yarmouth Light and Power Co., Ltd.	Yarmouth	Water	400	3	60	2,200	220	110	38	547
	Oxford Electric Light and Power Co., Ltd.	Oxford	Water	405	312	.....	2,200	2,200	2,200/110	.....	25
Montreal	Beauharnois Electric Co., Ltd.	Beauharnois	Purchased	1,200	3	60	2,200 6,600	220	110	9	452
	Canadian Light and Power Co.	Montreal	Water and steam.	28,800 2,500	3	60	2,200	.....	110	1	38
	Civic Investment and Industrial Co.	Montreal	Water and steam.	236,000	2/3	60	6,600	550	110/220	2,063	78,145
	Hemmingford Light, Heat and Power Co.	Hemmingford	Water	80	3	60	110	110	110	.....	51
	Huntingdon Light and Power.	Huntingdon	Water and steam.	150	3	60	6,600	550	110	.....	75
	Lachute Electric Light Co.	Lachute	.....	150	3	133	2,200	.....	110	.....	38
	Lachine, Town of	Lachine	Purchased	.....	3	60	.....	550	110	33	2,192
	Laval Electric Co	Montreal	Purchased	900	3	30	20,000	220/110	110	50	750
	Laprairie, Corporation of	Laprarie	Purchased	.....	3	60	2,300	550	110	4	150
	Montreal Public Service Corporation.	Montreal	Purchased	.....	3	60	4400/2200	550/220	110	260	10,114
	North River Electric Co., Ltd.	St. Andrews East	Water	375	3	60	2,300	220	110	65	.....
	Point Claire, Town of	Point Claire	Purchased	.....	3	60	2,200	2,200 220/110	110	1	297

	Ste. Anne de Bellevue, Town of.	Ste. Anne de Bellevue.	.....	.....	3	60	2,200	110/220 2,200	110	7	211
	St. Jerome, Village of.....	St. Jerome.....	Water.....	540	3	60	6,600	220	110	3	11
	Ste. Agathe des Monts, Village of.	Ste. Agathe des Monts.	Water.....	500	3	60	2,200	.....	110	.....	213
	Valleyfield Electric Light Co.	Valleyfield.....	Water.....	135	3	60	2,300	550/220	110	27	376
	Vaudreuil Electric Co., Ltd...	Vaudreuil.....	Purchased..	800	3	60	6,600	550	110	5	321
	St. Lambert, Corporation of...	St. Lambert.....	Purchased..	.....	3	60	2,400	550	110/125	8	660
	Westmount Light and Power Dept.	Westmount.....	Steam.....	1,200	3	60	2,300	550	110	.....	2,906
	Willetts, Limited.....	Chambly.....	Purchased..	1,000	2	60	2,200	550/ 220/110	110	1	100
Quebec, Que.....	Basin Electric Light and Power Co.	Montmagny.....	Water.....	150	3	60	2,200	110	104	.....	260
	Bay St. Paul Electric Light and Power Co.	Bay St. Paul.....	Water.....	350	2	60	104/ 2,000	.....	104	.....	.....
	Beauce Electric Power Co....	Sherbrooke.....	Purchased..	150	.....	.....	15,000	220/550	110	4	241
	Beauce Electric Power Co....	Levis.....	Water.....	4,800	3	60	10,500	550/2200	110	55	1,500
	Deblois & Veilleux.....	St. Anselme.....	Water.....	60	2	.....	2,400	.....	110	.....	15
	Julien, Charles.....	Pont Rouge.....	.....	.....	3	.....	2,300	550	110	.....	33
	La Cie D'Eclairage et d'Energie Electrique du Saguenay.	Chicoutimi.....	.....	2,000	3	60	2,200	500	110	.....	42
	La Cie D'Energie Electrique de St. Come.	St. Come.....	.....	50	3	.....	2,200	.....	110	.....	7
	La Cie Hydraulique de Portneuf, Ltd.	Deschambault.....	.....	650	3	60	660	220/550	110	.....	68
	La Compagnie Electrique D'Amqui.	Amqui.....	Water.....	250	3	.....	2,200	550	110	.....	79
	La Ville de Fraserville.....	Fraserville.....	.....	300	2	.....	2,400	.....	110	.....	.....
	Nairn Falls Power and Pulp Co., Ltd.	Malbaie.....	.....	500	3	60	4,400	220	110	.....	10
	Public Service Corporation of Quebec.	Quebec.....	Steam.....	3,500	3	60	2,400	550/ 440/110	220/110	125	5,400
	Quebec Ry., Light, Heat and Power Co.	Quebec.....	Turbine.....	9,000	2 & 3	60	2,000	550-220	104	278	9,900
	Rouleau Limitee.....	Mont Joli.....	.....	.....	3	60	2,200	110	110	.....	70
	Municipalite Village St. Raymond.	St. Raymond.....	Turbine.....	110	3	.....	1,100	.....	110	.....	28
	St. Lawrence Pulp and Lumber Corporation.	Chandler.....	Steam.....	3,000	3	60	600	600	110	10	.....
Sherbrooke, Que...	Bromptonville, Municipality of	Bromptonville.....	Water.....	2,500	.....	133	2,200	.....	110	2	12
	Coaticook Electric Dept.....	Coaticook.....	Water.....	650	3	60	2,200	550/220	110	15	450
	Granby, Corporation of.....	Granby.....	.....	250	1	60	2,380	2,380	110/220	.....	528
	Hurd, A. G.....	Sawyerville.....	Turbine.....	85	1	.....	2,080	.....	110	.....	42
	La Cie d'Eclairage Electrique du Village Megantic.	Lake Megantic.....	Gas.....	150	3	60	2,000	.....	110	.....	160
	La Corporation de la Ville de Magog.	Magog.....	.....	1,600	2	60	2,400	2,400	110	4	1
	La Compagnie Champoux.....	Disraeli.....	Water.....	100	1	60	2,000	.....	110	.....	.....
	Lennoxville Light and Power Co.	Lennoxville.....	Purchased..	.....	.....	.....	2,200	2200/550	110	9	200

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act.,—*Continued.*

District.	Company.	Address.	Prime Mover.		Phases of System	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Sherbrooke, Que. *Concluded.*	Mainville, J. U.	Roxton Falls	Water and steam.	Water, 100 Steam, 80	1	133	1,500	.....	100	.....	32
	Parker, J. B.	Dixville	.....	40	.....	.....	115	.....	100	.....	1
	Pike, W. M. & Son	Rock Island	Water	33	.....	DC.	110	110	110	.....	.....
	Richmond County Electric Co.	Richmond	Water	360	2	133	2,300	.....	100	.....	400
	St, Frances Water Power Co.	Thetford Mines	Water	3,000	3	60	2,400	2,400	110	5	30
	Shipton Electric Light and Power Co.	Danville	Water and steam.	210-150	1	60	2,080/2,308	.....	110	.....	110
	Sutton, Corporation of Village of.	Sutton	Purchased	.....	3	60	.....	6,600	115	.....	250
	Sherbrooke Ry. and Power Co.	Sherbrooke	Water	5,800	3	60	2,200	550-220	110	20	618
	Sherbrooke, Corporation of	Sherbrooke	Water	5,200	3	60	2,200/6,600	550-220	108	35	3,731
	Scotstown Electric Light and Power Co.	Scotstown	Water	200	.....	60	2,200	.....	110	.....	.....
	Two Miles Falls Water Power Co.	Weedon	Water	1,250	3	60	2,400	550-220	110	1	33
	Windsor, Corporation of Town of.	Windsor	Purchased	.....	.....	.....	.....	.....	.....	4	224
	Westbury Electric Light and Power Co.	Cookshire	Turbine	250	3	60	3,000	550	110	2	500
	S. Rousseau	Brome, Que	Turbine	100	1	133	1,040	.....	110	.....	6
	Athabaska Water and Power Co.	Victoriaville	Purchased	.....	3	60	.....	2,200/220	110	15	345
St. Hyacinthe, Que.	Belanger, N.	St. Pie	Water	75	.....	60	2,200	.....	110	.....	17
	Bedford Light Co., Ltd.	Bedford	Steam and water.	100	.....	133	1,000	.....	110	.....	3
	Beloeil, la Ville de	Beloeil	Purchased	.....	3	60	2,400	550	110	4	162
	Clark, W., Ltd., Electric Light Plant.	St. Remi	Steam	135	3	60	2,200	220	110	1	132
	Cornell, M. S. & Sons	Stanbridge East	Water	27	.....	DC.	110	.....	110	.....	2
	Dorval, Corporation of	Dorval	Purchased	136	3	60	2,200	220	110	2	142
	Farnham, Town of	Farnham	Water and steam.	1,560	3	60	2,300	550	110	.....	425
	Guertin, P.	Acton Vale	Water and steam.	50	1	60	2,200	.....	104	.....	14

	La Cie de Gaz, Electricite et Pouvoir.	St. Hyacinthe	Turbine	2,000	3	60	6,600	550	110	22	1,275
	La Cie Electrique de Nicolet	Nicolet	Purchased		3	60		100&220	110	4	125
	Marieville, Corporation de la Ville.	Marieville	Purchased		2	60	2,200	220/440 550/2200	110		165
	Pierrefonds Electric, Ltd	St. Genevieve de Pierrefonds.	Purchased		3	60	2,200		110		59
	Sorel Light and Power Co., Ltd.	Sorel	Purchased		3	60		440	110	30	1,000
	Southern Canada Power Co	Cowansville	Water	69·2	3	60	2,300	550	110		15
	Southern Canada Power Co	Drummondville	Water	400	3	60	2,300	550–220	110	14	500
	St. Maurice Light and Power Co.	Pierreville	Purchased			30	5,000		110	1	53
	St. Johns & Iberville Electric Co.	St. Johns	Purchased		3	60	2,200	2,200/550	110	25	922
	Vanchesteing, Mde. V. J	St. Jovite	Water	60	1	133	1,100	110	110		12
	Verdun, Corporation of	Verdun	Steam	600	3	60	2,200	550–220	110	6	4,000
Three Rivers, Que.											
Belleville, Ont	Fair & Mullett	Bancroft		75		DC.	125		125		
	Hydro-Electric Power Com	Belleville	Water				2,300	550–220	120–240	64	1,700
	Bobcaygeon Electric Light Commission.	Bobcaygeon	Water	200	3	60	2,300	110	110		
	Hydro-Electric Power Commission.	Bowmanville		1,500			44,000/2,200	220/500	110	17	667
	Hydro-Electric Power Com	Brighton						220/500	110	6	380
	Publie Utilities Com	Brockville	Steam	1,400	3	60	2,200	220/550	110	59	1,361
	Water and Light Com	Campbellford	Water	3,450	3	60	2,400	220–550	110		3
	Hydro-Electric Com	Cobourg						220	110	17	646
	Hydro-Electric Power Com	Deseronto						2,400	110	7	165
	Menzies, A	Fenelon Falls	Water	600	3	60	550	550	110		
	Electric Light and Water Supply Co., Ltd.	Gananoque	Water and steam.	1,400	3	60	2,400/250	550	120	32	458
	Folds Company, Limited	Hastings	Water	100	2	60	2,200		110		4
	Electric Light and Power Co., Ltd.	Havelock	Water	135	3	60	4,400	110–220	110		
	Kemptville Milling Co	Kemptville	Water	350	3	60	10,000	220	110		2
	Light, Heat and Power Dept	Kingston	Steam	800	3	60	2,200	550	110/220	103	2,078
	Lakefield Electric Light Co	Lakefield	Water	125	3	60	2,200	550	110		
	Hydro-Electric Power Com	Lindsay	Turbine	1,500	3	60	550	1,040/220	110	4	1,372
	Electric Lighting Committee	Madoc	Purchased					220	220		4
	Marmora Electrie Light Plant	Marmora	Turbine	100	1	125	1,040		104		
	Rideau Power Co., Ltd	Merrickville	Water	750	3	60	600	600/110/220	110		92
	Hydro-Electric Power Com	Millbrook			3		44,000	110/220	110/220	3	141
	Hydro-Electric Power Com	Napanee						2,400	110	16	508
	Hydro-Electric Power Com	Newcastle		100			44,000/2,200		110		144

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.,—*Con.*

District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Belleville, Ont. *Concluded.*	Harrison, W. C.	Norwood	Steam	75	1	133	1,000	.....	110	.....	.....
	Stephenson, Wm. G.	Omemee	Water	30	.....	.....	220	220	220	.....	.....
	Hydro-Electric Power Com.	Orono	.....	.....	.....	.....	.....	220	110	4	131
	Hydro-Electric Power Com.	Oshawa	.....	.....	3	60	4,200	550	110	49	1,406
	Peterborough Utilities Com.	Peterborough	.....	.....	.....	.....	6,600/2,200	110/220	.....	.....	4,170
	Hydro-Electric Power Com.	Port Hope	.....	.....	3	60	2,200	220/550	110	32	786
	Tait, William	Picton	Steam	.....	2	60	2,200	110/220	110	16	640
	Hydro-Electric Power Com.	Prescott	.....	.....	.....	.....	.....	220	110	15	602
	Electric Department	Stirling	.....	.....	1	.....	2,400	120/240	120/240	.....	1
	Electric Light Co., Ltd.	Sydney	Steam	90	3	60	2,200	110/220	110	1	76
	Hydro-Electric Power Com.	Trenton	Water	5,000	.....	60	6,600	220	120	55	950
	Hydro-Electric Power Com.	Tweed	.....	.....	.....	.....	.....	2,200	110	7	240
	Goodrich, J. H.	Warkworth	Water	80	2	60	2,200	110	110	.....	5
	Niles, W. P.	Wellington	Gas	65	.....	.....	500	500	250	.....	.....
	Westport Electric Light Co.	Westport	Water	286	3	60	2,300	.....	110	.....	.....
	Hydro-Electric Power Com.	Whitby	Water	.....	3	60	.....	220	.....	5	.....
	Benjamin Wheel Co., Ltd.	Yarker	Water	40	.....	DC.	125	.....	125	.....	.....
	Peebles, G. M.	Colborne	Hydro	.....	.....	.....	.....	.....	110	1	150
Fort William, Ont.	Dryden, Town of	Dryden	Purchased	.....	3	60	550	550	110	1	103
	Dryden Timber and Power Co., Ltd.	Dryden	Water	2,000	3	60	600	600	110	.....	.....
	Ontario and Minnesota Power Co., Ltd.	Fort Frances	.....	6,666	3	60	6,600	550	2,200/110	7	.....
	Fort Frances, Town of	Fort Frances	Water	6,800	3	60	6,600	220	110	15	450
	Kaministiquia Power Co., Ltd.	Fort William	Water	25,000	3	60	3,600/4,400	550	.....	.....	.....
	Kenora, Corporation of Town of.	Kenora	Water	3,296	3	60	2,400	2,200	2,200/110	15	360
	Public Utilities Commission	Port Arthur	Water	.....	3	60	2,200	220/550	220/110	46	3,182
	McMahon, H. C. & Co.	Mine Centre	Oil	6	.....	DC.	60–70	.....	50	.....	.....
	Municipality of McIrwine	Fort William	Water	6,800	3	60	6,600	.....	110	10	.....
	Rainy River Electric Light and Power Co.	Rainy River	Steam	150	3	60	2,200	110	110	.....	200
	Electric Dept. of City of Fort William.	Fort William	Purchased	.....	.....	.....	.....	224	112	41	4,295

Hamilton, Ont.....	Acton, Corporation of Town of	Acton.....	Hydro.....	.....	3	25	13,500	550	110	7	245
	Ayr Hydro-Electric System..	Ayr.....	Hydro.....	300	.....	25	4,000	550	110/220	2	118
	Baden, Police Village of.....	Baden.....	Hydro.....	.....	3	25	.....	220	110	5	75
	Hamilton Cataract Power, Light and Traction Co., Ltd.	Beamsville.....	Water.....	46,000	3	66	2,400	220	112	6	260
	Western Counties Electric Co., Ltd.	Brantford.....	Water.....	2,800	3	66	2,200	220	110	115	2,013
	Brantford Hydro-Electric System.	Brantford.....	Hydro.....	.....	.....	.....	26,000	550	110/220	29	2,462
	Hamilton Cataract Power, Light and Traction Co., Ltd.	Burlington.....	Water.....	46,200	3	66	2,400	220	112	20	680
	Caledonia, Village of.....	Caledonia.....	.....	.....	.....	.....	.....	220	110/220	6	69
	Delhi Light and Power Co., Ltd.	Delhi.....	Water.....	290	3	60	2,300	220	110	4	108
	Public Utilities Commission..	Dundas.....	Water.....	.....	3	60	.....	220/550	110	38	772
	Dundas Electric Co., Ltd.....	Dundas.....	Water.....	.....	3	66	2,400	220	112	5	75
	Dunnville Hydro-Electric System.	Dunnville.....	Water and gas.	125	3	60	2,200	.....	104	.....	102
	Elmira Public Utilities Commission.	Elmira.....	.....	300	.....	25	2,200	550	110	12	310
	Hydro-Electric Commission..	Galt.....	Hydro.....	.....	1	25	6,600	550	110/220	80	2,600
	Hydro-Electric Com. of Twp. Grantham.	Grantham.....	Hydro.....	.....	3	25	2,200	220	110/220	.....	125
	Hamilton Cataract Power, Light and Traction Co., Ltd.	Grimsby.....	Water.....	.....	3	66	2,400	220	112	21	500
	Hagersville, Corporation of....	Hagersville.....	Hydro.....	.....	3	25	.....	2,200	110	4	200
	Hamilton Electric Light and Power Co., Ltd.	Hamilton.....	Water.....	.....	3	66	2,400	220/110	112	60	4,289
	Hamilton Cataract Power, Light and Traction Co., Ltd.	Hamilton.....	Water and steam.	46,200	2	60	2,400	220	112	405	60
	Electric Power and Manufacturing Co., Ltd.	Hamilton.....	Water.....	.....	3	66	2,400	112	.....	10	.....
	Hamilton Hydro-Electric System.	Hamilton.....	Hydro.....	.....	3	25	13,200	2,200/220	110	450	14,038
	Hespeler Hydro-Electric.....	Hespeler.....	Hydro.....	.....	3	25	2,200	550	110	14	270
	Kitchener Light Commission.	Kitchener.....	Hydro.....	.....	.....	.....	.....	550/2,200	110	148	3,011
	Merritton Municipal Electric Light and Power Co.	Merritton.....	Purchased..	.....	3	25	.....	220/2,200	110/220	1	201
	Milton Hydro-Electric Com...	Milton.....	.....	750	3	25	.....	220/2,200	110/220	6	250
	New Hamburg Municipal Electric Dept.	New Hamburg.....	Hydro.....	300	3	25	2,200	550	110	5	280
	Ontario Power Co. of Niagara Falls.	Niagara Falls.....	Water.....	160,000	3	25	12,000	60,000	110	34	258
	Niagara Falls Hydro-Electric System.	Niagara Falls.....	Hydro.....	60	3	125	2,200	220/440	110	41	2,350

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Hamilton, Ont. *Concluded.*	Municipal Light and Power Plant.	Niagara	Purchased		1	25	2,200	110/220	110		330
	Paris Hydro-Electric and Water Com.	Paris	Hydro	800	3	25	2,200	220/550	110	3	600
	Preston Light and Water Com.	Preston		1,360	3	25	2,200	550	110	34	977
	Simcoe Hydro-Electric Com.	Simcoe	Hydro		3	25	26,000	550/220	110	12	125
	Municipal Light and Power	Smithville	Purchased		3	60		220	110	6	100
	Canadian Niagara Power Co.	Niagara Falls	Water	100,000	3	25	11,000	220/2200 4,400/ 11,000	110	64	
	Lincoln Electric Light and Power Co., Ltd.	St. Catharines	Water		213	60	2,200	220	110	115	1,000
	Hydro-Electric Com. of St. Catharines.	St. Catharines	Hydro		3	25	12,000	220/550	110/220	105	2,856
	Green, Arthur E.	St. George	Hydro		3	25	4,000	550	110	1	81
	Battle, James	Thorold			3	25	12,000/ 2,200			5	
	Thorold, Corporation of	Thorold	Water	220		60	2,200		110		494
	Toronto Power Co., Ltd	Niagara Falls	Water	125,000	3	25	12,000	12,000/ 60,000		18	
	Waterford Hydro Commission	Waterford	Hydro		3	25	4,000	550	110	1	151
	Waterloo Water and Light Com.	Waterloo			1		13,200/ 3,200	2,200/ 550	110/220	43	730
	Welland Electrical Co., Ltd.	Welland	Hydro		3	60		220	110		275
	Hydro-Electric Power Com.	Welland			3	25		220	110	25	500
	Wellesley Light and Power Com.	Wellesley	Hydro		3	25		220/550	110	2	81
London, Ont.	Alvinston Power Co., Ltd.	Alvinston	Steam	40	DC.		250	240	110		6
	Rock Glen Power Co., Ltd.	Arkona	Steam	60	3	60	2,200	220	110	2	63
	Aylmer Water and Light System.	Aylmer	Steam	300	3	60			110		400
	Beachville Hydro-Electric System.	Beachville	Hydro	200	3	50	2,200	550	110	3	55
	Blenheim Hydro-Electric System.	Blenheim	Hydro		3	25		220	110	1	300

The Corporation of Blyth	Blyth	Steam	60	1	133	1,100		110		80
Cargill, Limited	Bruce	Water	96	DC.		240	220	110		
John Nivins	Brussels	Steam	100	2	60	220	220	220	1	95
The Chatham Gas Co., Ltd.	Chatham	Steam and gas.	2,000	2	60	2,300	440	220/110	56	1,567
The Town of Chesley	Chesley	Purchased		3	60	22,000	220	110	8	227
Public Utilities Commission	Clinton	Purchased	600	3	25	13,200	550	110	6	320
Comber Hydro-Electric	Comber	Purchased		3	25		220	110		72
J. S. Pincombe	Delaware	Purchased	4,000	3	25	4,000	220	110		35
Dresden Hydro-Electric System.	Dresden	Purchased		3	25	2,300	220	110	1	310
Dutton Hydro System	Dutton	Purchased		3	25	2,300	550	110	1	162
Dorchester Hydro-Electric System.	Dorchester			3	25		220	110	2	80
Drumbro Hydro-Electric System.	Drumbo			3	25			110		57
Embro Hydro-Electric System.	Embro			3	25	2,200	220	110	2	90
Exeter Hydro-Electric System.	Exeter		100	3	25	4,400	550	110	1	240
Public Utilities Com	Forest		300	3	25	2,200	550	110		340
Glencoe Electric Light Com	Glencoe	Gas	96	3	60	2,200		110		115
The Town of Goderich	Goderich	Purchased		3	25		550	110	9	662
Hensall Hydro-Electric System.	Hensall		100	3	25	4,000	220	110	4	113
Ingersoll Water, Light and Sewer Com.	Ingersoll		300	3	25	2,200	550	110	51	796
Kincardine Waterworks and Electric Light.	Kincardine	Steam	250	3	60	2,300		110		225
Trustees Village of Lambeth	Lambeth	Purchased		3	25		550	110	1	69
Essex County Light and Power Co., Ltd.	Leamington	Water	750	3	60	2,200	220	110	52	1,587
Listowel Water and Light Commission.	Listowel	Purchased		3	25	4,400	550	110	7	354
Helena Costume Co., Ltd	London	Steam	400	DC.		220	220	110		50
London Electric Light Co	London	Steam	2,000	1	60	2,300	500	115	117	1,805
Public Utilities Com	London	Hydro	9,590	3	25	2,200	550	110	472	9,249
Greene Swift Ltd	London	Steam	100	DC.		500	500	110		6
Walter Stewart & Son	Lucknow	Steam	100	DC.		120		110		19
Village of Lucan	Lucan	Hydro		3	25		550	110	6	134
Jas. McHardy	Merlin	Gas	50	DC.		110		110		10
Mildmay Electric Light Co., Ltd.	Mildmay	Purchased						110		51
Light Power and Water Com.	Mitchell	Hydro	300	3	25	1,100	550	110	7	300
Hydro-Electric Com	Mount Brydges	Hydro		3	25		500	110	2	70
H. E. McNaughton	Newbury	Steam	45	DC.		110		110		
The Norwich Electrical Dept.	Norwich	Purchased		3	25	2,200	550	110	6	312
Hydro-Electric Light and Power Com.	Palmerston	Hydro		3	25	2,300	550	110	2	217
Paisley Electric Light Co	Paisley	Water	135	2	133	2,080	104	104		10
H. T. Bairdson & Co	Park Hill	Steam	100	DC.		220	220	220		40

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District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
London—*Con.*	Corporation Village of Plattsville.	Plattsville	Hydro		3	25		550	110	2	83
	Petrolia Hydro-Electric System.	Petrolea	Hydro		3	25		550	110/220	1	450
	Hydro-Electric Dept.	Port Stanley	Hydro		3	25	2,200	550	110	1	120
	Public Utilities Com.	Ridgetown	Hydro		3	25	4,000	550	110/220	3	280
	The Sarnia Hydro-Electric System.	Sarnia	Hydro		3	25	4,000	550	110	56	2,200
	Water, Light and Sewer Com.	Scaforth	Hydro		3	25	13,200	220	110	18	397
	Saugeen Electric Light and Power Co.	Southampton	Water	325	3	60	6,600	550	110	4	521
	Public Utilities Com.	Stratford	Hydro		3	25	2,200	550	110	95	2,500
	Public Utilities Com.	Strathroy	Hydro	300	3	25	13,200	550	110	8	470
	Water and Light Com.	St. Marys	Hydro		3	25	2,200	550	110	34	682
	Hydro-Electric Com.	St. Thomas	Hydro		3	25	2,200	550	110	109	2,764
	P. E. Steinman	Tavistock	Hydro	50	3	25	2,200	.....	110	.....	130
	Teeswater Electric Light Co.	Teeswater	Steam and water.	100	1 & 2	25	1,100	.....	110	.....	80
	Thamesford Hydro-Electric System.	Thamesford	Hydro		3	25	4,400	550	110	2	88
	Corporation of Thamesville.	Thamesville	Hydro					.....	110	.....	197
	Geo. Coultis & Son	Thedford	Steam	80	1	133	1,100	.....	110	.....	60
	Hyrdo-Electric Power Com.	Tilbury	Hydro	400	3	25	2,200	220	110	3	205
	Tillsonburg Hydro-Electric Co.	Tillsonburg	Hydro	250	3	25	2,200	550	110	.....	260
	Wallaceburg Hydro-Electric System.	Wallaceburg	Hydro		3	25	2,200	550	110	12	599
	Walkerton Electric Light and Power Co., Ltd.	Walkerton	Water	400	3	60	2,300	220	110	5	250
	Walkerville Hydro-Electric System.	Walkerville	Hydro		3	25	220/550	.....	110/220	75	1,719
	Marven White	Wheatley	Gas	55	DC.		125	125	125	.....	.....
	Sauble Falls Light and Power Co.	Wiarton	Water	220	3	60	6,600	220	104	.....	81
	Town of Wingham	Wingham	Water and Steam.	400	3	60	2,200	550	110	2	382

	Sandwich, Windsor and Amherstburg Railway.	Windsor	Steam	750	2 & 3	60	2,300	220	110	102	2,200
	Woodstock Water and Light System.	Woodstock	Hydro	1,200	3	25/60	2,200	220/550	110	39	1,600
	Wroxeter Electric Co.	Wroxeter	Water	50	3	60	100/140	1,000	105		47
	The Corporation	West Lorne	Hydro		3	25	2,200	220	110		77
	J. A. Williams	Zurich	Steam		DC.				110		
Ottawa, Ont.	Alexandria, corporation of	Alexandria			2	60	2,400		110		200
	Almonte Electric Light Com.	Almonte	Water	300	3	60	2,200		110		113
	Galetta Electric Power and Milling Co.	Arnprior	Water	700	3	60	2,260	2,200/550 220/110	110		270
	McLaren, Albert	Buckingham	Water	550	2	60	2,300		110		
	Brown, H. & Sons	Carleton Place	Water	525	3	60	2,200	110/220 550/2,200	108	1	535
	Chesterville, Corporation of	Chesterville	Hydro		2	60				1	118
	Cobden, village of	Cobden	Water	135	3	60	2,300	2,200	110		53
	Wilson, James	Campbell's Bay	Water	90	3	60	2,400		110		22
	Stormont Electric Light and Power Co., Ltd.	Cornwall	Water	200	1	133		500/220	110		955
	St. Lawrence Power Co., Ltd.	Cornwall	Water	1,400	3	60	2,200	11,000	110	6	155
	Hawkesbury Electric Light and Power Co., Ltd.	Hawkesbury	Water	6,000	3	60	10,000	550-220	110		82
	Hull Electric Co.	Hull	Water	980	2 & 3	60	2,200	550/440	118	23	2,011
	Cross, F. F.	Farm Point	Water	200	3	60	4,400	440	110		
	Estate M. F. Beech Power Plant.	Iroquois	Water	250	3	60	2,300	2,300			
	Iroquois, village of	Iroquois	Purchased		3	60	2,200	550	110		
	Maniwaki Electric Co.	Maniwaki	Water	265	3	60	125	220	110	3	3
	Morrisburg Electric Light and Power Co.	Morrisburg		250	3	60	2,300	110/550	110		
	Ottawa and Hull Power and Manuf. Co., Ltd.	Ottawa	Water	12,000	2 & 3	60	2,000	2,000			
	Ottawa Hydro Electric Com.	Ottawa	Water		3	60	11,000	440/550	110	193	9,129
	Ottawa Power Co., Ltd.	Ottawa	Water	2,000	2	60	2,250/220	2,250/220	220		
	Ottawa Electric Co.	Ottawa	Steam and Water.	17,000	2	60	2,300	214/428	107	419	16,840
	Papineauville Electric Co.	Papineauville	Water		3	60	2,300	110/550	110		5
	Renfrew Flour Mills, Ltd.	Pakenham	Water	100	1	133	1,000		110		
	Canadian Electric and Water Power Co., Ltd.	Perth	Steam and Water.	600	2	133	2,200	110/550	110	8	450
	Pembroke Electric Light Co., Ltd.	Pembroke	Water	1,000	3	60	2,300	2,200	110	1	800
	Renfrew, town of	Renfrew	Water	800	2	60	2,300	550	110/220		170
	Renfrew Power Co.	Renfrew	Water	1,000	2	60	2,300	550/2,300	110	1	333
	Shawville Light Plant	Shawville	Oil	18	DC.	60	60	60			80
	Citizens Electric Co.	Smith's Falls	Steam and Water.	350	3	60	2,250	440-220	110	8	400
	Smith's Falls Electric Power Co.	Smith's Falls	Steam and water.	600 & 500	3	60	2,200	220/550	110	3	510
	Williamsburg Hydro Electric System.	Williamsburg	Hydro	2,200	3	60	2,200	220	110	1	35

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			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Ottawa, Ont., *Con.*	Winchester Hydro-Electric System.	Winchester	Hydro				4,400/3,300	220	110	1	160
	Vankleek Hill Electric Co., Ltd.	Vankleek Hill	Purchased		2	60	120	120			33
Sudbury, Ont.	Deagle, Fred	Blind River	Water	300	3	60	2,400	110/220	110		1
	Northern Ontario Light and Power Co., Ltd.	Cache Bay	Water	2,500	3	60	2,200	110/220	110		50
	Hydro-Electric Power Com.	Callander						220	110		94
	Chapleau Electric Light and Power Co.	Chapleau	Water	400	3		2,300		110		343
	Canadian Copper Co	Copper Cliff	Water	20,600	3	25	2,400	550-220	110	56	
	Charlton-Englehart Light and Power Co.	Englehart	Water	1,080	3	60	2,200	550/220	110	6	190
	Elk Lake Power Co	Elk Lake	Water	300	3	60	550/580		110		12
	Spanish River Pulp and Paper Mills.	Espanola	Water	1,650	3		2,250	2,250/550	110/220		
	Little Current, corporation of.	Little Current	Steam	150	2	60	2,400		110		135
	Mattawa Electric Light and Power Co., Ltd.	Mattawa	Water	250	3		2,200		110		3
	Abitibi Power and Paper Co., Ltd.	Montreal, Que	Water	1,500	3	60	650	550	110		
	Hydro Electric Power Com.	North Bay	Water	2,000	3	60	2,200	550/220	110	16	2,035
	Hydro Electric Power Com.	Powassan					220	115/220	115	10	100
	Great Lakes Power Co., Ltd.	Sault Ste. Marie	Water	350	3	60	2,200/500	550-220	104	6	8
	City Water and Light Dept.	Sault Ste. Marie	Water		3	60	2,300	220/110	208/104	55	2,400
	Moose Mountain, Ltd	Sellwood	Purchased		3	60	33,000	110			15
	Northern Ontario Light and Power Co.	South Porcupine	Water		3	25	12,000	550-220	110	12	288
	Northern Ontario Light and Power Co.	Sturgeon Falls	water	2,300	3	60	2,200	110/220	110		325
	Steelton, corporation of town of.	Steelton	Purchased	6,000	3	60	2,200	220	110		586
	Sudbury, corporation of town of.	Sudbury	Purchased	670	2	60	2,300	220	110		1,500
	Sudbury Flour Mills, Ltd	Sudbury	Water	1,333		60	2,300	550	110		

	Wahnapitae Power Co., Ltd.	Sudbury	Water	9,333	3	60	2,300	550	110			
	Thessalon, town of	Thessalon	Steam	80	1	125	1,040	110	110	1		175
	Northern Canada Power Co.	Timmins	Water	3,000	3	25	12,000	12,000				11
	Northern Canada Power Co.	Timmins	Water	5,000	3	25	12,000	12,000				
	Northern Ontario Light and Power Co.	Timmins	Water		3	25	12,000	550–220	110	24		958
Toronto	Alliston Electric Light Co.	Alliston	Steam and water.	300 comb.	2	133	1,100		110			132
							2,200					
	Cataract Electric Co., Ltd.	Alton	Water	400	3	60	6,600	220	110			20
	Corporation village Arthur	Arthur	Hydro		3	60	2,200	220	110			88
	Electric Light Dept	Aurora	Purchased	T & Y. Radial	3	25	4,200	550	110/220	9		400
	Wenger Milling Co	Ayton	Water P	10	DC		115		110			1
	Barrie Electric Light Dept	Barrie	Steam	450	2	60	2,300	220	110	18		1,158
	Corporation Village Beaverton	Beaverton	Water P	2,000	1	60	1,200	220	110	6		191
	Corporation Village Beeton	Beeton	Steam	5	1	60	1,000		110			66
	Hydro Electric System	Bolton	Hydro		3	25	4,000	550	110	4		96
	Hydro Electric "Eders"	Bolton	Hydro		3	25	4,000	550	110	1		2
	Town of Brampton	Brampton	Hydro	1,200	3	25	13,000	550	110	24		860
	Corporation of Bracebridge	Bracebridge	Water P	1,850	2	60	2,200	110	110			77
	The Village of Brechin	Brechin	Water P	2,000	3	60	25,000	220	110	1		34
	The Knight Bros. Ltd	Burks Falls	Water P	225	1	125	1,100	500 DC	104			15
	Hydro Electric Dept	Cannington	Hydro	Purchased	3	60	4,000	220	110	6		179
	Cataract Electric Co., Ltd.	Cataract	Water Turbine.	400	3	60	2,200		110			
	G. W. Collins	Chatsworth	Hydro Purchased.		3	60	22,000	440	110	1		60
	Village of Coldwater	Coldwater	Transformers.	300	3	60	2,200	550	110	1		113
	The Water and Light Com'rs	Collingwood	Hydro	1,100	3	60	22,000	550/220	220/110	34		961
	Geo. Clendenning	Collingwood Township.	A. T. B.	130	3	60	2,300	2,200	110			20
	Village of Creemore	Creemore	Hydro	200	3	60	4,000	220	110	3		135
	Dundalk Hydro System	Dundalk	Hydro Purchased.		3	60	22,000	220	110	2		160
	Drayton Mills Ltd	Drayton	Steam	100	3	60	2,200		110			16
	Cataract Electric Co., Ltd.	Erin	Water	400	3	60	2,200		110			35
	Hydro Electric Com	Elora	Transformers.	300	3	25	4,000	550	110	3		170
	Village of Elmvale	Elmvale	Purchased	300	3	60	2,200	220	110	3		134
	The Village of Flesherton	Flesherton	Hydro	300	3	60	4,000		110			85
	Hydro Electric Dept	Fergus	Hydro	300	3	25	2,300	550	110	9		239
	Corporation of Village of Grand Valley.	Grand Valley	Hydro		3	60	22,000		110			90
	Electric Light and Water Com.	Gravenhurst	Hydro	1,600	3	60	2,200	550	110	9		375
	Light and Heat Commissioner	Guelph	Hydro	1,500	3	25	2,200	550	220/110	85		2,550
	H. Gruetzner	Hanover	Water	300	3	60	2,300	110	110			222
	Hydro Electric Com	Harrison	Hydro transformers.	300	3	25	4,400	550	110	2		170

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District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Toronto, Ont. *Con.*	Public Utility Com	Huntsville	Water P		3	60	6,600	220	110	2	344
	Hyrdo Electric Power Com	Markdale	Hydro		3	60	4,000	220/110	110	6	175
	Corporation Village of Markham.	Markham	Steam	100	2	125	1,140		110		145
	Georgian Bay Light and Power Co., Ltd.	Meaford	Steam and water.	600	3	60	2,300	220	110	3	341
	The Midland Water and Light Com.	Midland	Hydro		3	60	2,200	220	110	41	1,000
	Hydro Electric Power Com.	Mimico	Hydro	600	3	25	2,300	550	110	8	659
	Water and Light Com	Mount Forest	Hyrdo	400	3	60	2,200	220	110	5	259
	Albert Dike	Mount Albert	Gas engine	65	DC.		250	250	220	Flat rate.	
	The Corporation of Newmarket.	Newmarket	T. & Y. Radial.	120	3	25	1,400	550	110	10	545
	Municipality New Toronto	New Toronto	Hydro		3	25	2,300	550	110/220	9	250
	H. Gruetzner	Neustadt	Water P	300	3	60	2,300	110	104		25
	Cataract Electric Co., Ltd	Orangeville	Water P	400	3	60	2,200	220	110		100
	Town of Orangeville	Orangeville	Hydro	450	3	60	4,400	220	110	2	138
	Orillia Water Light and Power Com.	Orillia	Water P	1,600	2	66	1,200	2,200	110	4	254
	Public Utilities Com	Owen Sound	Steam	2,900	3	60	4,400	550	110	83	1,811
	Corporation Town of Parry Sound.	Parry Sound	Water P	500	3	60	2,200	550	110	13	833
	Corporation Toronto Township	Peel County	Hydro	200	3	25	2,200	550	110	6	205
	Town of Penetanguishene	Penetanguishene	Hydro	600	3	60	2,200		110	14	289
	Corporation town of Port Credit.	Port Credit	Hydro	300	3	25	2,200	550	110	3	180
	Corporation Village of Port McNichol.	Port McNichol	Hydro	66	3	60	2,200	220	115	2	100
	Corporation of Port Perry	Port Perry	Steam	75	1	133	1,100		110	1	131
	Municipality Village Richmond Hill.	Richmond Hill	Purchased	T. & Y. Radial.	3	25	4,200	550	110	7	149
	Village of Rockwood	Rockwood	Purchased	50	3	25	15,000	220/550	110	5	85
	Shelburn Hydro-Electric Com.	Shelburn	Hydro		3	60	4,200	220	110		181
	South River Electric Co	South River	Steam	100	3	60	2,300	220	110	Flat rate.	
	Corporation Town of Stayner	Stayner	Hydro	400	3	60	4,000	220	110	3	185
	Stouffville Electric Light Plant.	Stouffville	Steam	125	1	60	1,100		110		150

	Hydro-Electric Power Dept.	Sunderland	Hydro			60	4,000	220	110	1	79
	A. J. Lowiek & Son	Sutton West	Water P.	50	De.		220		220	Flat	rate.
	Municipal Electric light	Thornbury	Water P.	75	1	125	1,040		104		104
	Corporatioa of Tottenham	Tottenham	Steam	60	DC.		125	125	110		75
	Toronto and York Radial Ry. Co.	Toronto	Hydro		3	25	12,000	550	110	13	219
	D. M. Satir	Toronto	Hydro	75	3	25					
	Monarch Supply Co., Ltd	Toronto	Steam	300	DC.		250	250	110/220	10	53
	The Toronto Suburban Railway Co.	Toronto	Hydro	1,000	3	25	2,200	550	110	30	1,015
	Canada Veiling Co	Toronto	Hydro	DC.	3	25		250	115	3	8
	Kent Investments Ltd	Toronto	Purchased		DC.				110		36
	The Toronto Power Co., Ltd.	Toronto	Hydraulic	125,000	3	25	12,000	12,000		18	
	Toronto Electric Light Co	Toronto	Purchased	20,000	3	25	12,000	2,300	110	6,200	20,480
	Toronto Electric Light Co	Toronto	Steam	21,000	DC.		250	240/480	110		
	The Toronto Electric Com	Toronto	Purchased	35,185	3	25		550	115/230	1,950	42,063
	J W. Gould	Uxbridge	Steam	75	1	125	1,040		104		110
	Hydro Electric Power Com.	Victoria Harbour	Water P.	50	1	60	2,200		110		99
	Corporation Village Waubaushene	Waubaushene	Purchased	66	3	60	2,200	220	115	1	79
	The Weston Water and Light Com	Weston	Purchased		3	25	2,200	550	115	12	560
	Public Utility Com	Whitby	Purchased		3	60	4,000	550	108	13	500
	The Woodbridge Hydro Electric Com	Woodbridge	Purchased	300	3	25	4,000	550	110/220	6	98
	Hydro Electric Department	Woodville	Purchased		3	60	4,000	220	110	3	70
Winnipeg, Man.	Beausejour, corporation of	Beausejour	Purchased					13,000	110		50
	Boissevain, corporation of	Boissevain	Steam	135			2,200		110		130
	Brandon Electric Light Co, Ltd	Brandon	Steam and water	3,500	3	60	2,300	2,300	120	69	1,515
	Carberry, corporation of	Carberry	Steam	95	2	60	2,300		110/220		162
	Carman, corporation of	Carman	Steam	175			230		220		133
	Dauphin, corporation of	Dauphin	Steam	537	2		2,200	220	105	29	585
	Killarney Electric Light Co	Killarney	Steam	100	3	60	2,300		110		110
	Minnedosa Power Co	Minnedosa	Water	450	3	60	2,200	220	110	2	210
	Morden Municipal Electric Light Plant.	Morden	Steam	150	1	133	1,100		110		185
	Neepawa Municipal Light and Power Dept.	Neepawa	Steam	300	3	60	2,300	220	110/220	12	285
	Portage La Prairie, corporation of.	Portage La Prairie	Steam	900	3	60	2,200	220/550	110	30	700
	Rapid City, town of	Rapid City	Gas	50	3	60	2,200		110		87
	Russell, Corporation of Town of.	Russell	Gas	75	3	60	2,250	110	110	1	114
	Selkirk Electrical Dept	Selkirk	Purchased			60	2,200	110/220	110	56	450
	Shoal Lake, Corporation of	Shoal Lake	Oil	55	3		110/220		110	2	88
	The Pas, Corporation of	The Pas	Oil	240	3	60	2,300	220	110	3	255
	Winnipeg Light and Power Department.	Winnipeg	Water	48,000	3	60	6,600	550	110	849	34,445
	Winnipeg Electric Railway Co.	Winnipeg	Water and steam.	40,000	3	60	2,300	110/220/550	110	869	15,712

APPENDIX J.

List of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

District.	Company.	Address.	Prime Mover.		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Regina, Sask.....	Arcola Light and Power Co...	Arcola.....	Oil.....	44	1	60	1,100	.....	110/220	.....	91
	Battleford, Town of.....	Battleford.....	Purchased..	.....	3	60	2,300	220	110	16	270
	Broadview, Town of.....	Broadview.....	Gas.....	75	3	60	2,200	.....	110	.....	102
	Crabb, David E.....	Borden.....	Oil.....	12	.....	DC.	110	110	110	.....	.....
	Canora, Town of.....	Canora.....	Oil.....	96	3	60	2,200	220	110	1	125
	Carlyle Town of.....	Carlyle.....	Steam.....	52	3	60	2,300	.....	110	.....	74
	Davidson Light and Power Station.	Davidson.....	Gas.....	80	3	60	2,200	220	110	.....	115
	Eakins, H. G.....	Shaunavon.....	Oil.....	25	.....	DC.	110/115	110/115	110/115	.....	3
	Earl Grey, Village of.....	Earl Grey.....	Oil.....	15	.....	DC.	115	115	115	.....	.....
	Eastend Garage.....	Eastend.....	Gas.....	25	.....	DC.	125	115	.....	.....	12
	Estevan, Town of.....	Estevan.....	Steam.....	300	3	60	2,200	200	100	8	362
	Fort Qu'Appelle Power Co....	Fort Qu'Appelle.....	Oil.....	25	3	60	2,300	230	115	1	51
	Govan, Town of.....	Govan.....	Oil.....	20	.....	DC.	120	.....	110	.....	53
	Grenfell, Town of.....	Grenfell.....	Gas.....	64	3	60	2,200	.....	110	.....	123
	Hutchinson, Joseph.....	Gull Lake.....	Gas.....	64	3	60	2,300	220	115	1	102
	Humboldt Electric Dept.....	Humboldt.....	Steam.....	250	3	60	2,200	220/500	110	2	225
	Indian Head, Town of.....	Indian Head.....	Steam.....	225	3	60	2,200	208	104	.....	240
	International Power Co.....	North Portal.....	Purchased..	.....	.....	.....	.....	.....	220	.....	25
	Kamsack, Municipality of.....	Kamsack.....	Gas.....	200	3	60	2,200	110/220 2,200	110	3	165
	Klassen, H. M.....	Herbert.....	Gas.....	64	3	60	2,300	115	115	1	139
	Kindersley, Town of.....	Kindersley.....	Steam.....	135	3	60	2,200	220	110	1	141
	Langham, Town of.....	Langham.....	Gas.....	50	3	60	2,200	.....	110	.....	75
				1–255							
	Lake Herbert.....	Prussia.....	Gas.....	1–395	.....	DC.	125	115	115	1	44
	Lumsden Electric Light and Power Co., Ltd.	Lumsden.....	Oil.....	25	3	60	2,200	.....	110	.....	67
	Johnson, W. & Son.....	Lloydminster.....	Gas.....	100	.....	DC.	220	220	220	.....	106
	Morrison, Wm. *W*.....	Lashburn.....	Oil.....	25	.....	DC.	110	.....	110	.....	40
	Maple Creek Light, Power and Milling Co.	Maple Creek.....	Steam.....	100	3	60	2,200	.....	110	.....	110
	Melfort, Town of.....	Melfort.....	Oil.....	150	3	60	2,200	220	110	1	188
	Melville, Corporation of.....	Melville.....	Gas.....	250	3	60	2,300	220/2300	110/220	.....	350
	McCallum Hill Building, Ltd.	Regina.....	Purchased..	130	.....	DC.	.....	.....	110	.....	50
	Moose Jaw, City of.....	Moose Jaw.....	Steam.....	4,000	3	60	2,300	220	110	138	3,622

	Laponjade, E.	Morse	Gas	68	3	60	2,300	110	110	1	79
	North Battleford, City of	North Battleford	Oil	1,000	3	60	2,300	220	110	25	670
	Outlook, Town of	Outlook	Gas	72	3	60	2,200	220	110	1	150
	Oxbow, Town of	Oxbow	Oil	25		DC.	125	110	110		50
	Prince Albert Municipal Elec. Light and Power Plant.	Prince Albert	Steam	1,600	3	60	2,200	220/550	110/22	0 47	1,530
	Qu'Appelle Electric Light Co.	Qu'Appelle	Gas	90		DC.	220	220	220		75
	Radison Iron Works	Radison	Oil			DC.	115	115	115		35
	Regina Electric Light and Power Dept.	Regina	Steam	10,910	3	60	2,200	110/220 2,200	110/220	300	5,577
	Rosetown Electric Light and Power Co., Ltd.	Rosetown	Steam	110	3	60	2,300	2,300	220/110	1	80
	Rouleau, Town of	Rouleau	Gas	175	3	60	2,300		115		154
	Saltcoats, Town of	Saltcoats	Gas	50	3	60	2,200	110	110		85
	Saskatoon Electric Light and Power Dept.	Saskatoon	Steam	7,973	2	60	2,400	2,200/ 220	110	389	4,781
	Scott, Town of	Scott	Oil	100	3		2,200	220	110	3	40
	Semans Electric Light Co., Ltd.	Semans	Oil	15 & 9		DC.	120		115		28
	Strassburg, Town of	Strassburg	Gas	51	3	60	2,200		110		105
	Swift Current, City of	Swift Current	Steam and gas.	900 & 265	3	60	2,200	220	110	40	860
	Townsend, Arthur	Milestone	Oil	30		DC.	110		110		
	Tisdale Trading and Milling Co., Ltd.	Tisdale	Steam	14" & 14	3	60	550	2,200	110		49
	Thompson, Alexander L.	Ponteix	Oil	20		DC.	110		110		
	Wadena Municipal Lighting Plant.	Wadena	Gas	65	3	60	2,300		112		73
	Watrous Electric Light Co.	Watrous	Gas	88	3	60	2,300	110/220	110		120
	Weyburn, Corporation of	Weyburn	Steam	550	3	60	2,300	220	110	45	760
	Gordon, H. R.	Wilcox	Oil	9		DC.	115		115		
	Wilkie, Town of	Wilkie	Oil	100	3		2,200	220	110	1	130
	Wolseley Light and Power Plant.	Wolseley	Gas and oil	110	3	60	2,300	110	110	2	145
	Yellow Grass, Town of	Yellow Grass	Oil	25		DC.	110/115		110		70
	Yorkton, Corporation of	Yorkton	Oil	650	3	60	2,200	550	110	17	614
Calgary, Alta	Bankhead Mines, Limited	Bankhead	Steam	500	3	60	2,200	550–220	110		372
	Bowness Improvement Co.	Calgary	Gas	350	3	60	2,200	220	110	2	4
	Calgary, Corporation of City of.	Calgary	Steam and gas.	18,360	3	60	2,300	220	110	732	14,175
	Calgary Water Power Co., Ltd	Calgary	Water and steam.	2,875	3	60	2,200	210	105	30	1,750
	Calgary Power Co., Ltd	Seebe	Water	30,000	3	60	12,000	600	110		
	Canada West Coal Co., Ltd.	Taber	Steam	200	3	60	2,300	110	110	1	126
	Cardston, Town of	Cardston	Steam	100	2	60	2,200	2,200	110		164
	Claresholm, Town of	Claresholm	Steam	200	3	60	2,300		110		122
	Coronation, Town of	Coronation	Steam	120		60	2,200		110		120
	Didsbury, Town of	Didsbury	Steam	100	3	60	2,200	220	110	1	123
	Franco-Canadian Collieries, Ltd.	Frank	Steam	750	3	60	2,200	440–220	110		4

APPENDIX J.

LIST of Electric Light and Power Companies Registered under the Provisions of the Electricity Inspection Act, etc.—*Con.*

District.	Company.	Address.	Prime Mover.		Phases of System	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Calgary—*Con.*	International Coal and Coke Co., Ltd.	Coleman	Steam	1,800	3	60	2,200/250	2,200/250	250		
	Innisfail, Town of	Innisfail	Steam	100	3	60	2,200		110		133
	Knight Sugar Company	Raymond	Steam	100	3	60	2,300	220	110	1	4
	Lethbridge, City of	Lethbridge	Steam	3,000	2	60	2,200	2,200-220/110	110	94	1,964
	Macleod, Municipality of Town of.	Macleod	Steam	600	3	60	2,300	220	110	7	428
	Medicine Hat, City of	Medicine Hat	Steam	4,800	3	60	2,300	550/220	110	80	1,100
	Mutz, A.	Vulcan	Oil	35		DC.	120		110-120		18
	Nanton, Town of	Nanton	Steam and gas.	125-75	3	60	2,200		110		115
	Northwestern Engineering and Supply Co., Ltd.	Okotoks	Gas	100	3	60	2,300	220	110		
	Northwestern Engineering and Supply Co., Ltd.	Drumheller	Steam	110	3	60	2,300	220	110	1	77
	Pincher Creek Electric Light	Pincher Creek	Steam	285	3	60	2,250		110		200
	Rocky Mountains Cement Co., Ltd.	Blairmore	Steam	150	3	60	2,300	110	110	1	1
	Stagg, Geo	High River	Steam	160	3	60	2,200	110	110		220
	United Electric and Engineering Co., Ltd.	Bassano	Steam	80	3	60	2,300	220	110		120
	Vigar, F. C.	Gleichen	Steam	75		DC.	110	110	110		24
	Wino Power and Light Co.	East Calgary						210	110	4	6
Edmonton, Alta.	Camrose Municipal Power Pt.	Camrose	Steam	275	3	60	2,300	220	110	10	330
	Cardiff Collieries, Ltd.	Cardiff	Steam	150		DC.	250	250	250		
	Brayeau Collieries, Ltd.	Nordegg	Steam	500	3	60	2,300	440-220	110	3	16
	Edmonton, City of	Edmonton	Steam	15,000	3	60	2,200	220	110/220	318	11,799
	Fort Saskatchewan, Town of.	Fort Saskatchewan.	Steam	90	2	60	2,200		110		150
	Hardisty Electric Light Co.	Hardisty	Oil and gas.	12-50		DC.	440-220		220		26
	Jasper Park Collieries	Pocahontas	Steam	100-250	3	60	480	440	110		15
	Lacombe, Town of	Lacombe	Water and steam.	125	3	60	2,300		110		201
	Mountain Park Coal Co., Ltd.	Mountain Park	Steam	400		DC.	250	250-220	250		12
	Ponoka, Town of	Ponoka	Steam	75	3		2,300		110		122

	Stettler Electric Light Dept.	Stettler	Steam	200	3	60	2,200	220	110	9	170
	Vegreville, Town of	Vegreville	Steam	225	3	60	2,200	220	110		155
	Vermilion, Town of	Vermilion	Steam	75	3	60		2,200	110		196
	Wetaskiwin, Town of	Wetaskiwin	Steam and gas.	740	2	60	2,300	220	110	401	385
Vancouver, B.C.	Asheroft Water, Electric and Improvement Co.	Ashcroft	Oil	100	3	60	2,300	200	110		98
	Adams River Lumber Co., Ltd.	Chase	Steam	75	1	125	1,100		110		46
	Armstrong, Corporation of City of.	Armstrong	Oil and water.	300	3	60	2,200	110/220 2,200	110	4	200
	Britannia Mining and Smelting Co., Ltd.	Britannia Beach	Water and steam.	10,000	3	60	6,600	440–220	110		168
	B.C. Electric Railway Co., Ltd.	Vancouver	Steam	18,000	3	60	2,200	220	110	1,831	40,580
	Cranbrooke Electric Light Co., Ltd.	Cranbrooke	Steam	500	2	60	2,200	220	110	7	590
	Cascade Water, Power and Light Co., Ltd.	Rossland	Water	1,000	3	60	2,000	200	110		4
	Canadian Western Lumber Co. Ltd.	Fraser Mills	Steam	3,000	3	60	500	500	110	35	
	Crow's Nest Pass Electric Light and Power Co., Ltd.	Coal Creek	Steam	275		DC.	220		220		
	Crow's Nest Pass Electric Light and Power Co., Ltd.	Michel	Steam	400		DC.	220				
	Denver Light and Power Co., Ltd.	New Denver	Water	55	3	60	2,300		110		3
	Daly Production Co., Ltd.	Hedley	Steam	2,100	3	60	6,600–2,200	440/220	110		3
	Fernie, Corporation of City of.	Fernie	Steam	250	2	66	2,300	230	115	14	590
	Golden Light Power and Water Co., Ltd.	Golden	Steam	90	3	60	2,300		110		5
	Granby Consolidated Mining, Smelting and Power Co., Ltd.	Anyox	Water and steam.	6,000	3	60	2,200	2,200–440/220	110	6	172
	Grand Forks, Corporation of City of.	Grand Forks	Purchased					2,200	110	10	400
	Greenwood City Waterworks Co.	Greenwood	Water	150	3	60	4,400	220	115	1	6
	Kaslo, City of	Kaslo	Water	250	2	60	1,100	1,100	110		2
	Kelowna, Corporation of City of.	Kelowna	Steam	620	3	60	2,300	220	110	36	456
	Kamloops, Corporation of	Kamloops	Water and steam.	4,000	3	60	2,200	2,200/220	110	30	1,112
	Mission Water, Light and Power Co.	Mission City	Water	70	3	60	300	225	110		40
	Merritt, Corporation of City of	Merritt	Steam	200	3	60	2,200	220	110	1	282
	New Westminster, Corporation of.	New Westminster	Purchased		3	60	2,300		110		3,297

APPENDIX J.

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District.	Company.	Address.	Prime Mover		Phases of System.	Frequency of System.	Generator Voltage.	Service Voltages.		Number of Meters.	
			Type.	Horse Power.				Power.	Lighting.	Power.	Lighting.
Vancouver, B.C.—*Con.*	Nelson, Corporation of City of	Nelson	Water	2,500	3	60	12,000	2,200 440/220	110	27	707
	Okanagan Saw Mills, Ltd	Enderby	Steam	100	1	60	2,080	2,300	110	.....	160
	Okanagan Securities Co., Ltd.	Naramata	Water	60	3	.....	2,000	.....	110	.....	10
	Penticton, Corporation of	Penticton	Oil	200	3	60	4,700	220	110	2	435
	Prince George, City of	Prince George	Oil	150	3	60	2,300	2,300	115	.....	130
	Prince Ruper, Corporation of City of.	Prince Rupert	Water	1,650	3	60	4,400	2,200–220	110	44	803
	Powell River Corporation, Ltd	Powell River	Water	9,600	3	50	600	600	110–220	.....	27
	Phoenix Electric Lighting Co., Ltd.	Phoenix	Purchased	.....	.....	.....	.....	250	110	1	22
	Revelstoke, Corporation of City of.	Revelstoke	Gas and water.	250–2,300	3	60	2,300	220	110	22	722
	Rossland Water and Light Co.	Rossland	Purchased	.....	.....	.....	.....	110	110	.....	101
	Sumas Electric Light Co	Huntingdon	Purchased	.....	.....	.....	2,200	110	110	1	6
	Summerland, Corporation of District of.	West Summerland	Water	30" 45	3	60	2,200	.....	110	.....	140
	South Kootenay Water Power Co.	Rossland	Purchased	.....	.....	.....	.....	.....	.....	.....	.....
	Sandon Water Works and Light Co.	Sandon	Water	175	.....	DC.	125	110	110	.....	.....
	Salmon Arm, Corporation of City of.	Salmon Arm	Oil	150	3	60	2,200	110	110	1	110
	Vernon, Corporation of City of	Vernon	Oil	725	3	60	2,200	220	220/110	23	692
	Vancouver Power Co., Ltd	Vancouver	Water	64,200	3	60	2,200	220–550	.....	.....	.....
	West Kootenay Power and Light Co., Ltd.	Rossland	Water	28,000	3	60	2,500	220–550	110	39	.....
	Western Power Co. of Canada, Ltd.	Vancouver	Water	39,000	3	60	4,400	220–550	115	508	1,150
Victoria, B.C.	Alberni, Corporation of	Alberni	Purchased	.....	.....	60	200	.....	110	.....	69
	British Columbia Electric Ry. Co., Ltd.	Victoria	Water	2,300	3	60	700	220–660	110	395	12,685
	Canadian Explosives, Limited	Victoria	Purchased	.....	.....	.....	.....	220	110	.....	30
	Canadian Collieries (Dunsmuir) Ltd.	Cumberland	Turbine	10,000	3	25	13,200	220–440	110	.....	100

Courtenay Electric Light and Power Co., Ltd.	Courtenay	Purchased					110	110	16	94
Cumberland Electric Lighting Co., Ltd.	Cumberland	Purchased					110	110	1	446
Duncan, Corporation of	Duncan	Oil	2–100	3	60	2,200	220	110	3	136
Ladysmith, Corporation of	Ladysmith	Steam	160	3	60	2,200		110		400
Nanaimo Electric Light, Power and Heating Co., Ltd.	Nanaimo	Water and steam.	900	3	60	2,300	110/220	110	14	1,753
Pemberton Building Co	Victoria	Steam	113		DC.	110	110	110	2	13
Port Alberni, Corporation of	Port Alberni	Oil	150	3	60	2,300		110		120
Sayward, J. A	Victoria	Purchased					500–220	110	6	14
Sussex Manufacturing Co., Ltd.	Sussex	Steam	75 & 125	2	133	2,000		100		325
Uplands, Limited	Victoria	Purchased				2,200	110	110	3	14
Vancouver Portland Cement Co., Ltd.	Victoria	Purchased						110		15
Vancouver Island Power Co., Ltd.	Victoria	Water	25,500	3	60	2,300				
Vancouver Island Power Co., Ltd.	Victoria	Steam	6,000	3	60	2,300				
Victoria Electric Company	Victoria	Purchased						110		19

ORMOND HIGMAN,
Chief Engineer,
Gas and Electricity Inspection.

J. U. VINCENT,
Deputy Minister.

INLAND REVENUE DEPARTMENT,
OTTAWA, July 2, 1917.

REPORTS, RETURNS, AND STATISTICS

OF THE

INLAND REVENUES

OF THE

DOMINION OF CANADA

FOR THE FISCAL YEAR ENDED MARCH 31

1917

PART III

ADULTERATION OF FOOD

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1917

No. 14—1917.]

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REPORT

OF THE

DEPUTY MINISTER OF INLAND REVENUE.

OTTAWA, July 1, 1917.

To the Honourable ALBERT SÉVIGNY,
Minister of Inland Revenue,
Ottawa, Ont.

HONOURABLE SIR,—I have the honour to herewith submit to you a report of the work performed by the Laboratory of the Inland Revenue Department during the fiscal year ending on the 31st of March, 1917.

This report is prefaced by a review from the Chief Analyst of the work performed by the Laboratory staff during the fiscal year. It is unnecessary, therefore, for me to go into the matter therein referred to.

The Laboratory of the Department of Inland Revenue is gradually assuming its proper place amongst the services instituted by the Government for the protection of the public. The establishment of three branches, at Halifax, Winnipeg, and Vancouver respectively, has already proven the importance of this development in both facilitating and expediting the work of the Department, which has shown in many instances to have been a very great advantage to the public in general, and to trade in particular.

The department has, at present, under consideration, the extension of its mailing list, so that a greater public good may be derived from the publication of the bulletins through a wider dissemination of information of great interest to the business world and to the consuming world.

In this year's report, the department has determined to eliminate from the bulletins reproduced herein, the list of samples which usually accompanies the bulletins. This was done for purposes of economy, as there is no practical advantage in reproducing these lists of samples, when they have already been published with the bulletins and widely circulated throughout the year.

In conclusion, I may say that we have tangible evidence that both the honest business man, who happily forms the vast majority of our trade, and the people, are appreciating more and more the excellent work performed by Dr. McGill and his assistants.

I have the honour to be, Honourable Sir,
Yours very truly,

J. U. VINCENT,
Deputy Minister of Inland Revenue.

REPORT OF THE CHIEF ANALYST.

OTTAWA, June 21, 1917.

J. U. VINCENT, Esq., K.C.,
Deputy Minister of Inland Revenue,
Ottawa, Ont.

DEAR SIR,—I beg to submit herewith a report of the work done in the laboratories of the Inland Revenue Department during the fiscal year ending 31st March, 1917.

In my report of last year I referred to the satisfactory working of the sub-laboratories at Halifax, Winnipeg and Vancouver. I am pleased to be able to state that another year's experience goes to justify the step taken in the establishment of these local branches of the main laboratory. They have been found to do good service in many ways, and especially in enabling local work to be performed with less delay than formerly. I expressed a hope that further extensions might be found feasible in the near future, and particularly in the larger manufacturing and commercial centres. Although the demands made upon the national revenues at the present time are such as, for the moment, to necessitate retrenchment wherever possible, I am convinced that one notable outcome of the present war will be the successful development of manufactures heretofore regarded as too well established in the older countries to make hopeful any considerable rivalry on the part of Canada. This will, of course, involve largely increased work for our laboratories, where foods, drugs, or fertilizers are concerned, as well as in cases where alcohol, either as such, or suitably denatured, is permitted to be used, duty free or under specially privileged condition.

Halifax sub-laboratory.—This has been in charge of Mr. C. C. Forward, with Mr. A. J. Landry as assistant.

The subjoined statement gives, in concise form, the work done during this year.

No. of Samples Received.	Number Reported.	Description.	Date of report to Chief Analyst.
4	23	Canned tomatoes, 1916	April 24 and May 20.
29	41	Temperance beer	" 24 " 20.
4	23	Bran	" 24 " 24.
8	8	Florida water, etc	" 24.
2	3	Gluten meal or flour	" 24.
2	5	Aspirin	" 24.
93	93	Fertilizers	May 22 and July 18.
40	40	Maple syrup	July 18.
33	33	Gelatine	" 24.
34	34	Feed flour	" 19.
60	60	Tea	Aug. 4.
30	30	Prepared mustard	July 22.
30	30	Vanilla extract	Aug. 12.
30	30	Malt vinegar	Oct. 11.
39	39	Canned peas	Sept. 25.
39	39	Baking powder	Oct. 17.
14	14	White lead paint, 1917	Jan. 6, 1917.
15	15	Packaged borax	" 6.
20	20	Caramels	" 6.
20	20	Headache powders	" 6.
20	20	Ketchup	" 6.
5	5	Cream of tartar	Mar. 31.
35		Butter	
27		Chop feed	
66		Evaporated fruit	
60		Black pepper	
8		Peanut butter	
20		Fertilizers	
787	625		
111	111	Malt liquors for export—Excise.	
37	37	Special samples as follows:—	
		19 alcohol tests in beer, etc.	
		10 fertilizer materials.	
		4 cream.	
		1 flour.	
		1 evaporated apples.	
		1 boiler feed water.	
		1 cream of tartar.	
935	773		

Total number of samples received	935
Number received before March 31, 1916, reported	54
Total number samples reported	773
Work in hand, March 31, 1917, not reported	196

Soda solution supplied to Collector I. R. St. John, N.B., 1 Winchester.
Fees collected for analysis of special samples above mentioned and sent to Department, $106.25.

Winnipeg sub-laboratory—Has been in charge of Mr. E. L. C. Foster during the ear, with Mr. W. A. Davidson as assistant.

Mr. Forster's report is as follows:—

anned tomatoes	30	Malt vinegar	20
emperance beers	19	Baking powders	50
ay rum	10	Borax	10
ertilizers	42	Marmalade	20
lorida waters	10	Ketchup	15
ran	20	Caramels	15
eed flour	18	White paint	8
luten flours	3	Headache powders	15
elatine	17	Black pepper	60
laple syrup	25	Chop feed	38
repared mustard	15	Evaporated fruits	52
ea	129	Butter	39
anilla extract	15		
anned peas	49	Inspectors' samples	744

and the following forty-seven occasional samples:—

Butter	12	Baking powder	1
Evaporated apples	20	Vanilla extract	1
Milk	2	Cream	4
Beer	3	Buttermilk	1
Cream of tartar	1		
Wine	2	Total	791

The following excise solutions were also furnished:—

Normal soda solution	34 winchesters.
Normal sulphuric acid	1 4-oz. bottle.
Phenolphthalein solution	5 bottles.

Vancouver sub-laboratory—Has been in charge of Mr. J. A. Dawson during the year, with Mr. P. T. Kirwan as assistant until 31st May, 1916, when he resigned. Mr. F. C. Collier was sent out as assistant, July 1, 1916. Mr. Dawson's report of work done is as follows:—

Date.	Collection.	P.T.K.	F.C.C.	J.A.D.	Total.
1916.					
April 21	Coffee			80	80
May 2	Cream of tartar sub's	3			3
" 9	Vinegar			22	22
" 18	Sugar	49			49
June 11	Fertilizers			35	35
July 17	Chocolate			32	32
" 22	Evaporated fruit		40		40
Aug. 14	Cassia and cinnamon			22	22
" 25	Maple syrup		27		27
Sept. 15	Tomatoes		29		29
" 22	Temperance beer			6	6
Oct. 5	Toilet lotions			10	10
" 10	Gluten flour		3		3
" 18	Feed flour		8		8
" 31	Vanilla extract			10	10
Nov. 3	Bran		24		24
" 13	Gelatine			12	12
" 25	Prepared mustard			10	10
" 23	Tea		20		20
Dec. 9	Malt vinegar			20	20
" 29	Marmalade		20		20
" 30	White lead			8	8
1917.					
Jan. 5	Borax		5		5
" 15	Catsup		10		10
" 20	Caramels			10	10
Feb. 14	Peanut butter		5		5
" 15	Headache powders			10	10
Mar. 3	Butter			30	30
" 13	Evaporated fruit			34	34
" 14	Chop feed		31		31
" 28	Black pepper		45		45
		52	267	351	670
	Special samples		14	4	58
		52	281	355	728

The following solutions were supplied: 3 winchesters of normal soda, one bottle $\underline{N}$ H_2SO_4, and one bottle phenolphthalein.

The special samples were evaporated apples (Customs) 45, evaporated vegetables 7, vinegar 3, honey 1, sugar 1, arsenic 1.

The personnel of the technical staff of these laboratories, including the sub-laboratories is as follows:—

	Title.	31st March, 1916.	31st March, 1917.
At Ottawa	1 Chief Analyst	A. McGill	A. McGill.
	2 Deputy "	A. Lemoine	A. Lemoine.
	3 First Assistant	A. Valin	A. Valin.
	4 Second "	V. Kitto	V. Kitto.
	5 Third "	S. J. Cook	S. J. Cook.
	6 Fourth "	F. C. Collier	F. C. Collier (a).
	7 Fifth "	L. E. Westman	L. E. Westman (b).
	8 Sixth "	Vacant	G. H. Brother (c).
	9 Seventh "	"	M. Brot (d).
	10 Eighth "	"	R. M. Rowat (e).
	11 Ninth "	"	G. E. Grattan (f)
	12 Tenth "	"	J. A. Gunton (g).
	13 Eleventh "	"	W. H. Hill (h).
	14 Twelfth "	"	O. G. Lye (k).
	15 Laboratory Asst	Miss Wright	Miss Wright.
At Halifax	16 In charge	C. C. Forward	C. C. Forward.
	17 Assistant	A. J. Landry	A. J. Landry.
At Winnipeg	18 In charge	E. L. C. Forster	E. L. C. Forster.
	19 Assistant	W. A. Davidson	W. A. Davidson.
At Vancouver	20 In charge	J. A. Dawson	J. A. Dawson.
	21 Assistant	P. T. Kirwan	F. C. Collier (a).

(a) Transferred to Vancouver, 30th June, 1916.
(b) Absent, on leave, at Columbia University, from 1st November, 1916.
(c) From 25th May to Sept. 14th, 1916. Absent, on leave, at Toronto University, from Sept. 14th.
(d) From 1st June, 1916, to Dec. 31st. Absent, on leave, for munition work in France from latter date.
(e) From 8th August, 1916.
(f) From 15th January, 1917.
(g) From 13th January, 1917.
(h) " "
(k) From 10th February, 1917.

It will thus be seen that the technical staff at the main laboratory at Ottawa comprised 5 analysts for the entire year; in addition to which we had:—

Mr. Rowat for 8 months.

Mr. Westman, Mr. Brot for 3 months, Mr. Collier, Mr. Brother for 3 months, Mr. Gratton, Mr. Gunton and Mr. Hill for 2½ months and Mr. Lye for 2 months.

Vacancies noted in my last report have now been filled and the Ottawa staff, as at present constituted, is very satisfactory.

In addition to the above, Mr. S. Mirsky has been employed since 8th January, 1917, as laboratory assistant.

The following work has been done during the fiscal year; results being published as usual, in the form of bulletins.

ANNUAL REPORT—FISCAL YEAR 1916-17.

Number of Bulletin.	Subject Bulletins issued.	Number of samples.	Number of Bulletin.	Subject Bulletins Issued.	Number of samples.
338	Sausages	141	354	Gluten flour	21
339	Sweet spirit of nitre	85	355	Bran	186
340	Ground coffee	407	356	Aspirin tablets	65
341	Household ammonia	162	357	Canned tomatoes	222
342	Liquid extract of nux vomica	19	358	Cassia	143
343	Sugar and icing sugar	251	359	Tea	250
344	Spirit of camphor	168	360	Baking powder	213
345	Evaporated milk	73	361	Prepared mustard	124
346	Chocolate candy	151	362	Gasolene	88
347	Fertilizers for 1916	365	363	Malt extract for bakers' use	152
348	Maple syrup	162	364	Malt vinegar	185
349	Mace	175	365	Caramels	110
350	Feed flour	170	366	Canned peas	210
351	Bay rum, Florida water, etc.	75	367	Gelatin	137
352	Evaporated fruits and vegetables	180	368	Ketchup	111
353	Temperance beer	129		Total number of samples	4,930

In addition to the above, the following occasional work has been done and reported to the department in the regular correspondence:—

Acetic acid	52	Flour	1
Acetophen	1	Formin tablets	1
Ale	5	Fusel oil	13
Ammonium nitrate	1	Grape dregs	1
Aspirin	1	Honey	3
Baking powder	1	Humus	1
Barley	1	Icing sugar	1
Basic slag	2	Insecto	1
Beer	48	Jam	34
Belladona	1	Katalys powder	1
Benzol	12	Lemon extract	3
Bordeaux mixture	1	Lime juice	2
Bran	1	Lin. saponis	1
Butter	30	Liquor	6
Butter substitutes	2	Malt	1
Cake powder	1	Malt extract	6
Calf meal	2	Malt nutrine	1
Canned strawberries	1	Malt vinegar	5
Cheese	11	Malted milk	2
Cherry brandy	1	Maple sugar	2
Chloroform	5	Maple syrup	11
Cider	1	Maraschino cherries	1
Cloth	2	Marmalade	3
Cloves	8	Milk	38
Coffee	16	Mineral seal oil	6
Condensed milk	1	Morphia sulphate	1
Cooking compound	1	Morphine tablets	1
Cotton seed meal	1	Mustard	5
Cream of tartar	5	Nature's plant food	1
Cream of tartar substitute	1	Nerveline	3
Creola	1	Oil	1
Cresylone	1	Oil cake	1
Crude oil	1	Olive oil	4
Disinfectants	4	Opium	1
Diastase	1	Paint	9
Dried distillers' grains	1	Pastilles calmantes	1
Epsom salts	3	Peas	1
Ether	2	Peat	1
Evaporated apples	17	Pectin	1
Evaporated milk	7	Pepper	3
Extract lemon	2	Perolin	1
Feeds	4	Port wine	1
Fertilizers	10	Rosin	9

Salve	1	Vanilla extract	2
Sausages	11	Vinegar	13
Screenings	1	Water	15
Spent ginger	1	Wax	1
Spirits	190	Wescol	1
Sprucine	1	Wine	4
Sugar	3	White lead	5
Sugar beer	1	Wood alcohol	1
Sundries	6		
Tea	11	Grand total	729
Temperance beer	1		

Vinegars tested for excise 205

Solutions supplied—

Normal soda	Winchesters	95
" acid	bottles.	8
Phenolphthalein	"	7
		110

In conformity with a suggestion made last year, and accepted by yourself, I am furnishing, for inclusion in this report, only the introductory prefaces to bulletins published during the year. These prefaces take note of important conclusions reached as the result of work done. The details as to samples examined, specific analytical results, names and addresses of vendors and manufacturers, etc., are given in the bulletins themselves; and these are available to any person interested, on application to the Deputy Minister or to myself.

I have the honour to be, sir,

Your obedient servant,

A. McGILL,

Chief Analyst.

BULLETIN No. 338—SAUSAGES.

Ottawa, 12 April, 1916.

Sir,—The present report deals with work done upon one hundred and forty-one (141) samples of sausages, mainly with intent to discover the character of these goods as found in Canada, but also to ascertain whether or not certain modes of treatment not permitted to manufacturers who work under government inspection are in use by sausage manufacturers whose establishments are not supervised by the inspectors of the Department of Agriculture. This has particular reference to the use of dyes, and preservatives.

It has not been considered necessary to make exhaustive analyses upon all the samples, and the work herein reported may be summarized as follows:—

Examined as to	Moisture content	60 samples.
" "	starch content	80 "
" "	dyes	141 "
" "	preservatives	30 "
" "	ash content	20 "
" "	proteid content	20 "
" "	fat content	20 "
" "	bacterial	9 "

Sausages are defined as follows, by Order in Council of 14th October, 1910 (published as G. 931):—

"2. Sausage, sausage meat, is a comminuted meat from swine or neat cattle or a mixture of such meats, either fresh, salted, pickled or smoked, with added salt and spices and with or without the addition of edible animal fats, cereals, blood and sugar, or subsequent smoking. It contains no larger amount of water than the meats from which it is prepared contain when in their fresh condition, and not more than ten per cent of its weight of cereals; and if it bears a name descriptive of kind, composition or origin, it corresponds to such descriptive name. All animal tissues used as containers, such as casings, stomachs, etc., are clean and sound and impart to the contents no other substance than salt."

Moisture (Water) Content. This is required not to exceed the amount of moisture natural to the meats from which it is prepared. In this connection the following constants possess interest. They are taken from Leach "Food Inspection and Analysis", 2nd Edition, p. 213, et seq.

Beef as usually purchased.

	Chuck.	Ribs.	Loin.	Rump.	Round.	
Lean	57·4	52·6	58·2	56·6	64·4	Water.
Medium	57·9	43·8	52·5	45·0	60·7	
Fat	53·3	39·6	49·2	36·2	54·0	

Pork as usually purchased.

	Shoulder.	Loin.	Ham.	
Lean	44·9	46·1	59·4	Water.
Fat	——	41·8	33·6	

Of the total water present in sausages, it is generally accepted that the lean sausage meat contributes about 76 per cent the fatty tissue, from 3 to 8 per cent, and the starch or flour from 10 to 15 per cent (Allen Com. Org. Analysis, Vol. VIII, p. 361)

Konig (Jusammensetjung, etc., p. 1460) quotes 48·24 p.c. water for the mean of many analyses of pork sausages.

The results of analysis in the case of the present collection, and so far as water is concerned, are as below:—

Average for	10	samples from	New Brunswick	48·3 per cent.
"	10	"	Toronto	51·9 "
"	10	"	Hamilton	49·4 "
"	10	"	Alberta	43·9 "
"	10	"	Rocky Mountains	50·6 "
"	10	"	Vancouver	43·8 "
Average for	60	samples		48·0 per cent.

Starch Content of Sausages. The standards above quoted require that starch shall not exceed 10 per cent. As a matter of fact, our analytical results show that much less than this amount is usually present.

In the case of 80 samples examined, 75 samples contain starch. The average starch content is 3·14 per cent. In greater detail, the results are:—

For	10	samples from	New Brunswick	7·44 per cent.
"	10	"	Toronto	2·12 "
"	9	"	Hamilton	1·76 "
"	10	"	Manitoba	1·68 "
"	10	"	Saskatchewan	2·09 "
"	7	"	Alberta	3·89 "
"	10	"	Rocky Mountains	2·28 "
"	9	"	Vancouver	4·10 "
Mean starch for	75	samples		3·14 "

Dyes are present in 13 out of 141 samples examined. Dyed sausages were found as follows: in Montreal 5 samples; in Ottawa 4 samples; in Toronto, 2, and in Hamilton and Windsor, each, 1.

BULLETIN No. 339—SWEET SPIRIT OF NITRE.

OTTAWA, May 3, 1916.

SIR,—I beg to hand you a report upon eighty-five (85) samples of Sweet Spirit of Nitre (*Spiritus Aetheris Nitrosi*) procured by our inspectors during November and December of last year, in the districts of Manitoba and Saskatchewan.

This article has been made the subject of inspection under the Adulteration Act, on four different occasions, namely in 1891 (Bulletin 23), in 1908 (Bulletin 167), in 1911 (Bulletin 234), and in 1913 (Bulletin 255).

I may quote, in this connection, as follows from my introductory letter to the last named Bulletin.

"This important drug has on two former occasions been the subject of inspection, and has always been found to show a high percentage of adulteration; consisting not in the addition of foreign matters, but in containing less of the active principle (Ethyl Nitrite) than the standard set by the pharmacopœia requires.

"As has been pointed out in former bulletins, and emphasized by the pharmacopœias, the article is prone to decomposition and, unless kept with special care,

will always deteriorate in the hands of the dealer. This fact is so well known to the drug trade that physicians have a right to expect special care on the part of the druggist, who is properly held responsible for the quality of the drugs he dispenses. The following table presents the results of three inspections of Sweet Spirit of Nitre:—

Bulletin.	Year.	Total samples.	Genuine.	Adulterated.
			p. c.	p. c.
167	1908	77	37	63
234	1911	74	57	43
255	1913	73	56	44

The minimum amount of Ethyl Nitrite required by the British Pharmacopœia is [illegible]e and three-quarters per cent (1·75) by weight. Of the collection now reported, 44 per cent of the samples contain less than this amount; 30 per cent contain less than 1 per cent of Ethyl Nitrite; 14 per cent contain less than one-half of 1 per cent; while nearly 9 per cent of the samples contain none at all.

"Although the names of the manufacturers, or furnishers as supplied by the vendor, are given in their proper places in the appended table, it is but right to insist that responsibility for the quality of Sweet Spirit of Nitre should rest upon the immediate dealer, or vendor of the article. There is no reason to believe that any manufacturer of repute furnishes this drug otherwise than up to standard strength. The name of the manufacturer or furnisher is given in accordance with section 19 of the Act, and not because of any proved negligence on his part.

"It is abundantly evident, in view of the continued sale of this drug in a condition in which it seriously handicaps the physician, and imperils the well-being of the patient, that druggists must be made to realize their responsibility in dispensing drugs which fail to meet the standard set by the pharmacopœias.

"Experiments made by the late Franklin T. Harrison, Public Analyst, proved that Sweet Spirit of Nitre made according to British Pharmacopœal directions can be kept, without change, for a year, under proper precautions. (See Bulletin No. [illegible] p. 7.)

"If this important drug cannot be procured by physicians in such condition as the pharmacopœia requires, it should either be removed from the pharmacopœia altogether, or physicians must learn to employ it in full knowledge of its doubtful character and be prepared for most erratic and uncertain results.

"The fact is that it can be prepared and kept by careful and intelligent druggists, and that this is not done must be regarded as a disgrace to the drug trade, and a very serious menace to the public."

The results of the present inspection may be summarized thus:—

	Samples.
Found to meet B.P. requirements	4
" correct as to content of Ethyl Nitrite	31
" approximately correct as to Ethyl Nitrite content	12
" to contain decided excess of Ethyl Nitrite	19
" to contain marked deficiency of Ethyl Nitrite	19
Total	85

It is to be noted that the revised pharmacopœia of 1914 makes some slight change in the standard for this drug as below:—

	1898.	1914.
Method of preparation	Unchanged.	
Ethyl Nitrite in freshly prepared spirit	2·5%	2·66%
Specific gravity	0·838	to 0·842
Ethyl Nitrite as dispensed: minimum	1·75%	1·52%
" " maximum	2·50%	2·66%

Since the revised pharmacopœia of 1914 has but recently come into recognition in Canada, it is fair to interpret the results of analysis in such a way as to conform to either the edition of 1898 or that of 1914. As a matter of fact the differences as far as this drug is concerned are negligible.

It will be noted that, in the matter of specific gravity only five (5) samples fall within the limits fixed by the pharmacopœia. Fifty-four (54) samples have a specific gravity below 0·838 and twenty-six (26) samples have specific gravity above 0·842.

The latter are doubtless prepared with weaker alcohol than 90 per cent.

Samples (12 in number) which do not deviate more than 0·5 per cent from the minimum percentage of Ethyl Nitrite fixed by the pharmacopœia, I have felt justified in describing as approximately correct, in their Ethyl Nitrite content.

Nineteen (19) samples, containing less than this must be described as adulterated under the Act. The percentage of adulteration is 22, and indicates a very considerable improvement when compared with the results of former inspections.

BULLETIN No. 340—GROUND COFFEE.

Ottawa, May 4, 19

Sir,—I beg to hand you a report dealing with four hundred and seven (407) samples purchased as Coffee in December, January and February last.

The results of this inspection may be summarized thus:—

Found genuine	341	samples.
Passed, as containing less than 10 per cent, foreign matter	12	"
Passed as labelled mixtures	16	"
Doubtful, for reasons given below	3	"
Adulterated under the Act	35	"
Total	407	"

Five (5) of the samples judged as genuine contain minute amounts of chicory or other foreign matter; but the amount is too small to be regarded as other than accidental.

Twelve (12) samples containing small amounts, generally much below 10 per cent. of foreign matters, are passed without being adjudged as adulterated. It may be that in some of these cases the foreign matter is present accidentally. In a strict interpretation of the results of analysis, these samples are undoubtedly adulterated; and it must not be understood that my action prejudices any future decisions in similar cases.

Three samples are classed as doubtful. See No. 55434, the fact that the article was a compound, was not stated until the purchase had been made.

No. 55447 contains both chicory, and roasted grain. The presence of chicory is dcared on the label, but no mention of the presence of roasted grain is made.

The same is true of No. 52326.

The percentage of genuine samples in this collection is 83·5, indicating a slight faing off since 1910, when a report upon two hundred and ninety-seven (297) samples slwed 88 per cent. to be genuine.

BULLETIN No. 341—HOUSEHOLD AMMONIA.

Ottawa, June 15, 1916.

Sir,—Of late years Ammonia has come to be largely in use in the household, as a dergent and for the convenience of persons in whose hands the strong solution of ammonia would be attended with danger, manufacturers have placed on the market a dute ammonia under the name of Household Ammonia, which finds very extensive sæ. For the most part, this article is simply a dilution with water of the strong solutin (Liquor Ammoniae Fortis) of the Pharmacopœia. This latter is required to cotain 32·5 per cent by weight of Ammonia (NH^3). A weaker solution is also defined b the Pharmacopœia (Liquor Ammoniae) containing 10 per cent by weight of Ammoa. It may be mentioned here that the Ammonia of the French Codex contains only 2618 per cent and the Aqua Ammoniae Fortior of the United States Pharmacopœia, 2 per cent by weight of Ammonia.

Some market samples of the article contain, in addition to Ammonia, soaps of various kinds, and other ingredients.

In January 1914, Professor J. F. Snell of Macdonald College, presented to the Canadian Section of the Society of Chemical Industry a study of Commercial Household Ammonia in Canada. (See Journal of the Society, 1914, p. 1177) and recommended that a more extended inspection of the articles be made under the Adulteration Act.

Ammonia, considered as a drug, undoubtedly comes under the purview of this Act. While Household Ammonia cannot be described as a drug in the strict sense, it has been thought well, in the interest of the public generally, to examine this article, and the present report deals with the more or less complete analysis of one hundred and sixty-two (162) samples, purchased by our inspectors as Household Ammonia, in December, January and February last.

Professor Snell reports upon the Analysis of 10 samples of clear ammonias, 5 samples of so-called cloudy Ammonias (containing soaps), and 6 samples of solid Ammonias (essentially carbonate of ammonia) and finds, for the liquid preparations, that "the household Ammonia sells wholesale at from 4 to 14 times the wholesale value of the Ammonia contained in it. The retail price is from 6 to 20 times the wholesale value of the Ammonia," and adds, "How much more economical it would be to buy commercial concentrated ammonia, and dilute it with good soft water."

There is of course a certain convenience in purchasing the article in a form ready for use, and that the average consumer is willing to pay for this service is amply evident when we consider the extensive sale of many foods in neat packages, which could be purchased at much less cost in bulk. It is however, a reasonable claim, when the purchaser asks how much in excess of its minimum market value he pays for the advantage of package, or in the case of Household Ammonia, of dilution and package. It is certainly with surprise and indignation that the purchaser learns of the six-fold increase found by Professor Snell.

With a view to establishing as far as possible, a relation between value and price of these articles I have tabulated (see Table II) the results of analysis, grouping

together samples bearing the same name (Brand). On account of the difficulty attending exact measurement of containers the information given in Table II must be regarded as approximate only.

From this it is seen that one unit of Ammonia, purchased in 12 ounce bottle, costs from 1·877 of a cent (cheapest) to 12·918 cents; the average cost being about 3 cents.

In order to obtain some idea of the cost of the same quantity of Ammonia, in twelve ounce package, bottle included, I caused four samples to be purchased in Ottawa, and Hull, and found these to cost 35 cents, in each case. The Ammonia values were found to be 23·14; 22·54, 21·98 and 23·24; giving a mean value of 22·72 per cent. The value per unit, is thus found to be 1·540 cents.

It is to be noted that this is the cost of a pure Ammonia, and a less highly purified article may be purchased at a considerably lower price. In a general way it may be said that our examination of so-called Household Ammonia essentially substantiates the findings of Professor Snell, and leads to the conclusion that the consumer can effect a substantial saving, by purchasing liquid Ammonia and diluting with water to suit his purposes.

I would respectfully suggest publication of this report as Bulletin No. 341. It contains information which will be helpful to many questioners regarding possible household economies.

BULLETIN No. 342—LIQUID EXTRACT OF NUX VOMICA.

OTTAWA, May 20, 1916.

SIR,—I beg to hand you herewith a report upon nineteen (19) samples of the Liquid Extract of Nux Vomica. This is not to be regarded as a comprehensive inspection of the important drug named, but as an attempt to ascertain what, if any, ground exists in fact for certain complaints made by physicians as to the varying and unsatisfactory results obtained in practice with the Liquid Extract of Nux Vomica. The samples now reported were purchased in Montreal and Toronto only. Their examination is considered, as will be seen to justify a more extended inspection; and the present report is to be regarded as preliminary.

It must be conceded that a certain degree of unsatisfactoriness exists regarding the valuation of this drug. It is prepared from the seeds of Nux Vomica, in No. 20 powder, by repercolation with 70 per cent alcohol. The percolate from a given weight of powder is equal, in units by measure, to the units of weight employed (grammes and cubic centimetres) in the British Pharmacopoeia of 1898; in the revision of 1914, the percolate is only half of this volume. In each case, the strychnine content of the percolate is determined, and the Extract is finally adjusted by addition of 70 per cent alcohol, to contain 1·5 percent of strychnine (weight in volume).

The seeds of *Strychnos Nux Vomica* contain two alkaloids, strychnine and brucine, whose physiological properties appear to be very similar, although the activity of brucine is much less than that of strychnine. Thus, the dose of Strychnine is fixed at 1/64 to 1/32 grain (B.P. 1914), while that of brucine is given as 1/10 to 1/2 grain. (Squires' Companion to the Pharmacopoeia, Ed'n 1908.) Both of these alkaloids are naturally present in the Liquid Extract; and if they were present in the Seeds of Strychnos in a constant ratio, it would of course be possible to infer the amount of either by a determination of the other. Unfortunately this is not the case; and the ratio of strychnine to brucine has been found to vary between 3 to 1 and 1 to 2. (Squire, p. 810).

In the assay of the percolate from powdered Nux Vomica, the preliminary steps are identical in both the 1898 and the 1914 editions of the British Pharmacopoeia. The separation of the two alkaloids was effected, however, in the Edition of 1898, by

ecipitation of the strychnine with potassium ferrocyanide, in sulphuric acid solu-on, and subsequent decomposing of the strychnine ferrocyanide. It has been found Schweissinger (Allen, Com. Org. Analysis, VI, 446) that under these conditions ucine ferrocyanide is co-precipitated, to some extent, thus affecting the accuracy the method.

In the Edition of 1914, the brucine is destroyed by oxidation with nitric acid in esence of sulphuric acid, and it is claimed that this method yields more accurate sults for strychnine. In illustration of the results of work done upon the same mple by both methods, I may quote the following:—

Sample.	Method of 1898.	Method of 1914.
64627	1·45	1·32
64628	1·54	1·45
64629	1·49	1·35
62636	1·26	1·24
62637	1·49	1·32
62640	0·88	0·92
64632	0·95	0·95

will be seen that in most of these cases a somewhat higher apparent strychnine ntent is obtained with the older (and now no longer official) method.

There can be no doubt that most of the Liquid Extract of Nux Vomica now on ie market has been assayed by the method given in the pharmacopoeia of 1898; and, ideed, in a strict sense this is the only method recognized by our Adulteration Act, 1 which Section 7 (a) specifically names the Edition of 1898.

Under these circumstances, and inasmuch as the collection of the samples now eported was restricted to two localities, I think it inadvisable that the names of ealers or manufacturers (as stated by the vendors) should be given.

Quite apart, however from this consideration the results of analysis are instruc-ive, and serve to show that variations in the composition of the Liquid Extract of Tux Vomica exist, apart from the strychnine content.

The analytical results given in the following table were obtained by Mr. A. J. andry, of this staff, working by the official method of the British Pharmacopoeia, Edition of 1914.

LIQUID EXTRACT OF NUX VOMICA.

Sample.	Total Solids. Grm. per 100 cc.	Alcohol. Vol. p.c.	Strychnine. Grm. per 100 cc.
64626	11·50	59·72	0·78
64627	15·90	59·72	1·32
64628	14·96	54·48	1·45
64629	17·07	50·98	1·35
64630	15·38	65·32	1·44
64631	11·00	36·16	0·91
64632	2·25	74·32	0·95
64633	16·26	64·96	1·44
64634	11·78	68·32	1·57
64635	15·92	58·96	0·78
64636	25·36	36·52	1·46
64637	15·42	56·92	1·31
62636	11·83	61·20	1·28
62637	13·50	67·56	1·32
62638	18·06	50·32	1·59
62639	9·70	....	0·78
62640	12·02	....	0·92
62641	9·44	46·44	1·43
62642	14·48	....	0·76

Mr. Landry reports the usual difficulties attending the estimation of small quantities of alkaloids in solution with fats, vegetable matters of varying kinds and more or less vegetable tissue and colouring; and his duplicates indicate a variation of from 0·01 to 0·15 in strychnine found. Accuracy is only possible where the mean of several carefully conducted determinations is taken.

I know Mr. Landry to be a careful worker, and am convinced that the results given indicate within very narrow limits, the actual strychnine present. The *modus*

operandi for preparation of the Liquid Extract is strictly defined by the pharmacopoeia; and, unless the crude drug varies greatly in its quality, it is difficult to account for the differences in total extractive matter, except on the assumption of carelessness in manufacture.

The British Pharmacopoeia of 1898 did not standardize the powdered drug. The edition of 1914 fixes this at 1·25 per cent of strychnine, and prescribes the addition of milk sugar to adjust this value, within a limit of accuracy of 0·05 per cent excess or defect.

The total solids are found to vary, in these samples, from 2·25 per cent to 25·2 per cent. These extreme differences do not correspond to the variation in strychnine content; the sample giving only 2·25 per cent of total solids contains 0·95 per cent of strychnine; whilst that giving 25·36 per cent solids, yields but 1·45 per cent of the alkaloid. The pharmacopoeal standard requires 1·50 per cent strychnine. Most of the samples which approximate to this percentage show about 14 to 16 per cent total solids. It appears reasonable to suppose that a normal sample of the crude drug should, on definite treatment as prescribed by the pharmacopoeia, yield an extract of approximately constant character as regards dissolved solids. This matter requires investigation.

Alcohol of 70 per cent strength is prescribed; and there can be no sufficient reason for a variation in strength of from 36·16 to 74·32 in the finished extract.

I beg to recommend that this subject be more fully investigated in the near future; and that the present report be published as Bulletin No. 342.

BULLETIN No. 343—SUGAR.

OTTAWA, June 12, 1916.

SIR,—I beg to hand you a report upon 175 samples purchased as Sugar and 7[illegible] samples purchased as Icing Sugar, by our inspectors in December, January and February last.

Standards defining Sugar and Icing Sugar were established by Order in Council under Section 26 of the Adulteration Act, on August 1, 1914, and are published as G. 1135 bearing date August 6, 1914, as follows:—

SUGAR.

1. Sugar is the product chemically known as Sucrose (Saccharose) and is at the present time found in commerce as obtained from Sugar Cane, Sugar Beets, Sorghum, Maple and Palm.

2. Sugar whether sold as granulated, loaf, cut, milled or powdered sugar shall contain at least 99·5 (ninety-nine and five-tenths) per cent of sucrose, and shall be free from any artificial colouring matter.

3. Icing sugar is a powdered sugar specially prepared for baker's use, and may contain starch, not to exceed five (5) per cent by weight.

The standards above defined take effect on the 7th day of September, 1914.

The results of examination may thus be summarized:—

Sugar (see Table 1).

	Samples.
Found genuine refined Sugar	143
" " brown Sugar	25
" adulterated, as containing a dye	6
Passed, as being very close to the standard	1
Total	175

Sample No. 4003, contains 99·3 instead of 99·5 per cent sucrose.

The following samples contain a blue dyestuff (apparently ultramarine) and in this respect violate standard requirements: 67498, 70567, 70108, 71947, 71953, 52310.

Standards for partially refined Sugar, have not been defined; and samples sold as brown Sugar, or yellow Sugar, are all found to be genuine, in the sense of being true to name.

Icing Sugar (see Table 11).

This form of sugar is permitted to contain starch, not in excess of 5 per cent, by weight. A small quantity of starch is apparently necessary in order to prevent the lumping of the article, when the atmospheric conditions are not satisfactory. A very small amount of moisture in the air causes finely powdered sugar to form lumps, and it is found that a small quantity of dry starch prevents this, while not interfering with the use for which the sugar is intended. It appears to be well established that from two to three per cent of dry starch is quite sufficient for this purpose. Our standards permit starch to be added, not to exceed 5 per cent.

In the case of 16 samples it will be seen that our inspectors have been supplied with powdered sugar, containing no starch, and answering the requirements of refined sugar. In four cases the excess of starch is less than 1 per cent, and I have recommended that these samples be allowed to pass. The results of examination may be thus exhibited:—

	Samples.
Found genuine as Icing Sugar	50
" within 1 per cent and passed	4
" to be refined Sugar	16
" to contain decided excess starch	4
No. 3665 nearly refined Sugar	1
" 71957 containing almonds	1
	76

This is the first occasion upon which sugar has been systematically inspected, since fixation of standards. A limited inspection of sugars was made in 1891 and is reported in Bulletin No. 25. In 21 samples of white (refined) sugar the sucrose was found to vary from 98·84 to 99·8 per cent, averaging 99·26 per cent. In 22 samples of yellow sugar, from 86·00 to 94·9 per cent sucrose was found, the average being 90·23 per cent.

BULLETIN No. 344—SPIRIT OF CAMPHOR.

OTTAWA, June 27, 1916.

SIR,—I beg to hand you a report upon Spirit of Camphor.

This article is defined by the British Pharmacopœia (1914) as consisting of 100 parts by volume of 90 per cent alcohol, containing 10 parts by weight of Camphor in solution.

The specific gravity should be between 0·845 and 0·850; and the optical rotation should not be less than 4° at 15·5° Centigrade.

The formula is essentially identical with that given in the edition of 1898.

Our last general inspection of Spirit of Camphor is reported in Bulletin No. 178 (March, 1909). On that occasion, 74 samples were examined as regards alcohol only; and it was considered fair to accept 75 per cent of alcohol as a reasonable minimum in the product as dispensed. This allows a very considerable margin for evaporation due to repeated opening of the container.

The Camphor content should approximate 10 per cent (weight in volume); and although Camphor is more or less volatile from solution, it is relatively less so than alcohol, so that its proportion is likely to increase, rather than diminish in stock solutions. I have therefore considered that anything below 8·5 per cent weight in volume indicates an adulterated article.

The present report deals with 168 samples purchased as Spirit of Camphor. Five samples are evidently accepted by our inspectors in mistake, four of these accepted by Mr. Gendreau being Gum Camphor, and one (No. 62916) being alcohol only.

Nineteen of the remaining samples depart so slightly from the Standard as above interpreted, that I have passed them. The following synopsis presents the detailed results:—

Meet legal requirements	126	samples.
Passed, as within narrow limits	20	"
Adulterated, as deficient in camphor	5	"
" " both		
" camphor and alcohol	9	"
" as containing methyl alcohol	3	"
Purchased by mistake	5	"
Total	168	

The substitution of methyl alcohol in whole or in part for ethyl alcohol in Spirit of Camphor, necessarily constitutes adulteration; under the Adulteration Act. It is also forbidden by Section 7 of the Amendment to the Inland Revenue Act, dated April 10, 1908, unless the presence of methyl alcohol is declared upon the label of the container.

I am informed that there is a certain demand for a low-priced Spirit of Camphor, for veterinary use, and that this is frequently prepared with denatured alcohol, or with Columbian Spirit. However this may be, it furnishes no excuse for offering the article as pharmacopoeal Spirit of Camphor.

BULLETIN No. 345—EVAPORATED MILK.

Ottawa, July 6, 1916.

Sir,—I beg to report certain work done upon a limited collection of samples (73 in number) of evaporated milk. These have been examined with the view of ascertaining whether any ground in fact existed for certain complaints to the effect that the metals of the container (tin and lead) were taken into solution by the contents when these developed an acid reaction.

Acidity has been determined in 17 samples, and is found to vary from 28·8 to as high as 46·4, when stated as cubic centimetres decinormal per 100 grammes of the sample. The full meaning of this as tending to render soluble the metal of the containing vessel has yet to be worked out.

In another series of samples tests were made for tin and lead. Practically no determinable quantities of lead were found in solution. Tin was found in 44 samples, the amount varying from a mere trace to as much as 62 milligrammes per 100 cubic centimetres; or 620 parts per million (about 4 grains per pound or 0·062 per cent).

Regarding the effect of this upon health, I may quote Thresh and Porter (Preservatives, etc.; Churchill, London, 1906, page 204). "At the present time no one seriously contends that the amount of tin in solution in these (acid) foods has any

effect upon the system. As a rule the quantity is very small, rarely amounting to one grain per pound of food substance. *Autenrieth.* (Laboratory manual, etc., trans. Dr. Warren, pub. Blakistons, Sons., Phila., 1915), page 174, says: "Hence tin vessels may be used, and preserved articles of food containing tin, have practically no deleterious action upon health." *Kunkel.* (Handbuch der Toxikologie, s. 216) says: "This is a very slightly poisonous metal. This is established beyond doubt." The extent, however, of its possibly poisonous action, he considers worth further investigation. Parry (Food and Drugs, Scott, Greenwood & Son, London), page 373, says: "There is no evidence of a cumulative action of tin, until the daily dose exceeds 2 grains. Dr. Buchanan states that the presence of tin in a sample, in quantities approaching 2 grains to the pound may be taken to signify that the food has become potentially deleterious to health." I have noted as excessive an amount of tin exceeding 2 grains per pound, or 0·03 per cent. This occurs in 9 samples out of 44 samples in which quantitative determination of tin was made.

I propose to carry this examination for tin and lead further, at an early date, and to attempt to correlate the acidity of the sample with the amount of metallic contamination.

As judged by the ordinary standards for evaporated milk, 46 samples in which the required determinations have been made give results showing them to be essentially up to standard requirements. Two samples were curdled, owing to incomplete sterilization. In six samples the non-fat solids are somewhat low. These are probably made from a rich milk which has been watered. The content in fat meets our standard for evaporated milk; viz. 7·2 per cent.

It may be noted that our standards requiring 7·2 per cent fat and 18·8 per cent non-fat solids were made legal in November 1910; and were at that time, identical with those obtaining in the United States.

In November 1914, an Amendment of the U.S.A. Department of Agriculture changed the standards so as to require 7·8 per cent fat and 17·7 per cent non-fat solids. This change was considered advisable because it was held that, in certain of the Western States, milk solids were normally lower than in the Eastern and Middle States; and that the deficiency obtained in the non-fat solids. So far as Canada is concerned the matter has not been fully investigated; but it may be that owing to differences in the feed and pasture, the same difference holds good. It seems only just to allow, in the meantime, for a possibility which has been established south of the boundary line.

BULLETIN No. 346—CHOCOLATE CANDY.

Ottawa, July 27, 1916.

Sir,—I beg to hand you herewith a report dealing with the results of analysis of 151 samples purchased by our inspectors as chocolate candy.

Attention has been drawn, by various large manufacturers of confectionery to the employment of solid paraffin as a stiffener in certain brands of chocolate. One correspondent writes as follows: "We wish that the Government would be as particular in regard to the adulteration of chocolate and chocolate products in Canada, where substitutes are used for cocoa butter and other substitues for chocolate, as they are in regard to maple. We think it would be of advantage to every one if it were so. We have recently been advised by a salesman for paraffin wax, that the confectioners in Canada are using this very largely. This is an adulterant that has been cut out in almost every other country except Canada. We believe it is largely

used in the cheap chocolates referred to, for when they use a substitute for cocoa butter, they have to use something to stiffen up the chocolate coating."

The National Confectioners' Association of the United States, issued a Food Law Circular under date May 20, 1913, containing a list of substances prohibited in confectionery, among which appears paraffin.

The Food Laws of Illinois, Nebraska and Utah, specifically forbid the use of paraffin in candy; and those of many other States are interpreted in such a way as to condemn its use.

It is certain that so-called paraffin or paraffin wax is wholly without food value; is quite indigestible, and is not a normal component of any natural food material. Its melting point (about 54·5° C. = 130·1° Fah.) is so high as to keep it solid at the body temperature, and being quite insoluble in the digestive fluids, it is conceivable that serious results might ensue from its presence in foods, consequent upon mechanical disturbances.

It will be noted that 126 samples are found to be genuine, in the sense of being essentially cocoa material, while seven samples contain more or less starch, as the only foreign matter. Ten samples show the presence of other fats than cocoa fat, and eight samples contain paraffin.

We have as yet, no legalized definition of confectionery specifically forbidding the use of paraffin. The report now handed you will constitute a basis for the study of this matter, with a view to recommending legislation.

BULLETIN No. 347—FERTILIZERS FOR 1916.

OTTAWA, September 6, 1916.

SIR,—I beg to hand you a report upon the examination of 365 samples of Fertilizers, representing the inspection of fertilizers under the Fertilizers Act of 1910, for the current year.

The results may be summarized as below:—

	Samples
Found to meet claims	330
Found to meet claims by compensated value	18
Found nearly to meet claims and passed	8
Found sold without registration number	2
Found below claims	7
Total	365

The deviations from guaranteed value are usually very small, and the report now in your hands shows an evident desire on the part of manufacturers of fertilizers, to live up to claims made. It is, however, to be noted that many fertilizers which in other years have claimed considerable amounts of potash, this year claim none, or notably smaller percentages than formerly. This is doubtless due to the scarcity of salts of potash, owing to war conditions.

Six brands of fertilizers make claims for very small amounts of potash, less than 0·50 per cent. These claims represent no tangible values, and I think that claims for less than 0·50 per cent should not be allowed. Our Act (section 15) specifically concedes a deviation of half of one per cent as possibly accidental, and as negligible, provided that the total value of the fertilizer is not materially affected by it.

In 18 samples the words "compensated value" are used. It is sufficiently evident that many manufacturers have confounded the terms available and soluble as applied

to phosphoric acid. The actual difference in value between water soluble and citric soluble phosphoric acid may be very small, and I have felt justified in recognizing this fact in interpreting the results of analysis. One sample (No. 70700) claims a total value so small as to render it practically useless as a fertilizer. It should not be found on the market.

BULLETIN No. 348—MAPLE SYRUP.

Ottawa, 14th September, 1916.

Sir,—I have the honour to present you a report upon two hundred and nine (209) samples purchased as Maple Syrup, by our inspectors during the current year.

Of this number, one hundred and sixty-two (162) samples are found to be genuine, in the sense of meeting standard requirements for Maple Syrup as defined in G. 994 and G. 1152. Six samples meet these minimum requirements within such narrow limits as to justify suspicion of their genuineness, but I have recommended that they be passed; thus giving a total of 168 samples as probably genuine, being 80 per cent of the total collection.

Forty one samples are adulterated, in the sense of being mixtures of cane sugar syrup with maple syrup, but sold as Maple Syrup.

Our inspectors were instructed to demand Maple Syrup, and the samples now reported were supplied by the vendors as answering this demand. In two instances the vendor, after making sale, and discovering that the purchaser was an officer of this Department, stated that he did not claim the article sold to be pure Maple Syrup. In one of these cases the manufacturer's label upon the container, claims that the article is Maple Syrup; in the second case the label bears the words "Pure M Syrup", which is undoubtedly intended to make the purchaser believe that he is being served with Maple Syrup.

In most of these cases of fraudulent sale, the manufacturer's label distinctly claims the article to be Maple Syrup; and I have noted the presence of these words on the label where such label has been seen by myself or by the analyst, who did the work of analysis.

There can be no excuse for offering as Maple Syrup an article which is a mixture, as in these cases. The article may be, and in most cases is, a very desirable and nutritious food; but it should be placed upon the market under conditions which would correctly inform the purchaser as to its character. It is noteworthy that the uttering of the surrogate article appears to be entirely in the hands of a small number of manufacturers, in Montreal and Toronto. The great proportion of samples purchased in localities where Maple Syrup is recognized as an established farm industry, as in New Brunswick and Quebec, are found to be genuine; and there can be no doubt that a real injury is done to these provinces when the markets offered by our western provinces and our larger cities are supplied by imitations of Maple Syrup, which profess to be the genuine article.

BULLETIN No. 349—MACE.

Ottawa, October 18, 1916.

Sir,—I beg to hand you herein a report upon the spice known as Mace. This is the first occasion upon which we have dealt with the article named, and owing to the

facts that comparatively little investigatory work is on record regarding this spice; that no accepted standards for it exist, and that even importers of the article are imperfectly informed as to its source and character, the report now placed in your hands must be considered rather as a study of the subject, than as a record of official inspection.

The attention of the Department has been called to the matter by several interested parties, from one of whose letters I quote the following:

> "Has your Department ever made a collection of this spice? The reason we ask is this. A good Amboyna or Penang costs at the present time (April, 1914) about 61½ cents per pound, while Bombay, which is a wild mace, can be purchased for 24 cents a pound. In order to reduce the cost per pound, the spice-grinders generally blend either of the first two with the latter. While Bombay is truly mace, yet it does not contain any essential oil, and has no flavouring power, and therefore really acts as a filler."

Mace is the arillus, or outer coating of the nutmeg, the seed of Myristica fragrans (British Pharmacopoeia.) "This tree is indigenous to the Molucca Islands, and is cultivated in Penang, Sumatra, the West Indies, etc. Penang nutmegs, which are the most esteemed, are very aromatic. Singapore nutmegs closely resemble them. Wild nutmegs are longer, narrower, and less aromatic. Bombay nutmegs, (M. Malabarica) are devoid of aroma. Of species of Myristica other than M. fragrans, only one, viz.: M. Argentea, the Papua nutmeg, yields aromatic seeds. Mace is the dried arillus. Considerable quantities of valueluess Bombay mace are imported." B. P. Codex, p. 652.

Mace, like the nutmeg, owes its value as a spice to its content of volatile oil, and according to Allen (Com. Org. Analysis, IV, 359) this oil is practically identical in nutmeg and mace. The Oleum Myristicae of the pharmacopoeia is stated by Allen to be a fraction only of the natural oil. Specifications for this oil, are somewhat changed in the 1914 edition of the B. P.

—	1898.	1914.
Specific gravity	0·870 to 0·910.	0·876 to 0·925.
Optical rotation	Not given	+13° to +30°.
Refractive index	"	(25° C) 1·474 to 1·484.
Solubility	In 1 vol. mixture equal parts absolute and 90% alcohol.	In 3 volumes of 90% alcohol.
Residue at temp. of boiling water	No crystalline residue	Not to exceed 5%.

That Bombay mace must be regarded as of no value for the purposes of a spice, follows from the above quotation from the B. P. Codex. In addition I may quote Kraemer. (Pharmacognosy, 1915, p. 256.) "Bombay mace is very largely used to adulterate genuine mace." Also Bailey (Food Products, 1914, p. 451.) "Bombay mace, which is often used to adulterate Penang and other true maces, has practically no flavour, and is of little more value than so much inert material."

Leach (Food Inspection, etc., 1909, p. 467) says: "Bombay mace, is almost entirely devoid of odour or taste, being nearly as inert as so much starch. It is most properly regarded as an adulterant from its lack of pungency, even though in a sense, it is a variety of mace."

U. S. A. standards for Mace, are as follows: (Circular 19, Dept. of Agriculture, Washington.) "Mace is the dried arillus of Myristica fragrans, and contains not less than 20, nor more than 30 per cent. of non-volatile ether extract; not more than 3 per cent. of total ash, and not more than 0·5 per cent. of ash insoluble in hydrochloric acid; and not more than 10 per cent. of crude fiber."

"Macassar mace, Papua mace, is the dried arillus of Myristica Argentea." "Bombay mace is the dried arillus of Myristica Malabarica."

Leach (Food Inspection and Analysis, 2nd edition, p. 466) quotes the following analytical results, obtained by Winton, Ogden and Mitchell upon samples of the three kinds of mace specified in the above standards:

1. True mace (means of 4 samples.)
2. Macassar mace.
3. Bombay mace.

—	1	2	3
Moisture	11·05	4·18	0·32
Ash total	2·01	2·01	1·98
Ether extract, volatile	7 58	5·89	4·65
" non-volatile	22·48	53·54	59·81
" total	30·06	59·43	64 46
Alcohol extract	23·11	32·89	44·27
Reducing matters by acid conversion, as starch	31·73	10·39	16·20
Starch, by diastase	27·87	8·78	14·51
Crude fibre	3·20	4 57	3·21
Nitrogen x 6·25	6·47	7·00	5·06

It will be noted that true mace is sharply distinguished from the other maces by its non-volatile ether extractive, which is much less than that yielded either by Macassar or by Bombay mace.

With regard to Macassar mace, Leach (op. cit.) says: "Macassar mace is sometimes designated as wild mace, but it is by no means as inert as the Bombay variety, and possesses a wintergreen like odour. Its taste, while distinctive, is not that of true Penang mace. It is distinctly an inferior article."

The value of the ethyl ether extractive as indicating the presence of Bombay mace is greatly enhanced if the sample be extracted with petrolic ether before applying the ethyl ether. (Parry, Food and Drugs, Vol. 1, p. 237.) Under these conditions, genuine mace yields only from 2 to 3·5 per cent. extractive to ethyl ether, while Bombay mace yields up to 33 per cent.

Macassar mace, however, behaves like Banda mace in this respect.

Qualitative tests for Bombay mace.

The microscopical characters of these various maces are not such as to satisfactorily distinguish them. Nevertheless, the oil glands in Bombay mace are so much redder than those of true mace, as to afford fairly good evidence of its presence.

Mr. Dawson suggests the possibility of utilizing the brilliant red produced in Bombay mace by treatment with dilute potassium hydroxide, as a means of quantitative determination in admixture.

Mr. A. T. Collins, Chemist to the Colburn Company, Philadelphia, has shown that, when mace is mounted in Canada Balsam, reduced by benzol, the cellular structures come out clearly under the microscope; and he claims that very small percentages of Bombay mace, in admixture with true mace, can easily be detected.

The Hefelmann and Schindler tests depend upon the fact that alcoholic extracts from Bombay mace differ from similar extracts of true mace, in yielding a decided red colour to paper through which they are filtered; and in giving a precipitate of reddish tint with acetate of lead. (Parry, op. cit., p. 237.) Waage's test consists in adding

potassium chromate to the alcoholic solution, when the solution becomes red, and the precipitate at first yellow, becomes red on standing, if Bombay mace is present. True mace gives a yellow solution and the precipitate does not turn red. (Leach, op. cit., p. 468.) The refractive index of the fixed oil of Bombay mace (at 35° c.) is somewhat lower than that of the fixed oil from other maces. Lythgae finds as follows:

For Banda mace oil	1·4747 to 1·4848
" Batavia mace oil	1·4893 to 1·4975
" Papua mace oil	1·4795 to 1·4816
" West Indian mace oil	1·4766
" Bombay mace oil	1·4615 to 1·4633

E. Spaeth (Leffmann and Beam, Food Analysis, 2nd ed., p. 309-10) extracted a number of samples of mace with petroleum spirit and determined the constants of the material obtained. The figures obtained from mace from Banda, Menado, Penang, Macassar, and Zanzibar closely agreed with each other:—

—	True Mace.	Bombay Mace.
Melting Point in open tube	25–26	31–31·5
Saponification Number	169·9–173	189·4–191·4
Iodine Number	75·6–80·8	50·4–53·5
Zeiss Refractometer at 40°	76–85	48–49
Index of Refraction	1·480–1·487	1·463–1·464
Meissl Number (Banda Mace)	4·1–4·2	1·0–1·1

In June of last year I was fortunate enough to secure, through the kindness of the late Mr. Grigg, Canadian Commissioner of Commerce, three samples of mace from Mr. E. H. S. Hood, Canadian Trade Commissioner of Barbados. These represent the qualities of mace exported from Grenada, B.W.I., and are described as:

No. 1. First quality.
No. 2. Second quality.
No. 3. Third quality.

The Superintendent of Agriculture for Grenada states that "he does not think there is any adulteration in the No. 3 sample, other than what may accidentally occur in the process of sweeping up the fragments from the curing floors or boxes. The differences in quality are mainly of colour, and strength of the aromatic oil as affected by the action of mildews during drying, and the length of time, and methods used in the curing process."

The three samples referred to were submitted to analysis by Mr. J. A. Dawson of this staff, who reports as follows:

Sample No. 1. Marked "Best Estates and Buyers" consisted of the clean arillus in whole condition, of a dull yellow colour, with reddish brown to pink along the edges. Weighed 465 grams.

Sample No. 2. Marked "2nd Best Estates and Buyers" was made up of mostly broken arillus of dull reddish to blackish brown colour, with few yellow pieces. One or two fragments of grass or bark. Weighed 463 grams.

Sample No. 3. Marked "Mace Siftings, Estates and Buyers" included small broken fragments of arillus of yellow, red and black or brown colours. Pieces of grass, bark, leaves and chips of wood, with a few whole seeds like peas or coffee beans. Several short pieces of thread, possibly from jute bags, and two dead insects. Weight, 487 grams.

In sampling, the whole contents of each package were spread out on a sheet of paper and thoroughly mixed. About 100 grams were weighed out and ground to pass a sieve of 1 sq. mm. Figures given are in all cases the mean of two determinations.

—	No. 1.	No. 2.	No. 3.
Total ash	1·50	1·70	2·10
Ash insol. in 10% HCl	0·05	0·05	0·09
Non-volatile petrolic ether extractive	29·85	29·02	26·43
Non-vol. ether extractive after petrolic	1·14	1·43	1·55
Total ether extracts	30·99	30·45	27·98
Crude fibre	2·87	3·14	3·80
Refractive index of non-vol. petrolic ether extract	1·4791	1·4788	1·4821
Microscopic examination for Bombay mace	None.	None.	None.
Starch (iodine test)	Absent.	Absent.	Absent.

Two samples of mace obtained direct from Bombay, through the kindness of A. H. Ley, Esq., gave the following results:

Sample A. Known as "Chap" cost 1s. 10d. per lb.
" B. " "Ful" " 1s. 8d. "

—	A	B
Total ash	1·94	1·96
Insoluble ash	0·044	0·012
Crude fibre	3·80	3·60
Petrolic ether extract	20·95	20·94
Sulph. "	0·87	0 54
Total extractive	21·82	21·48

It is quite apparent that these samples are true mace, and not the Bombay or wild mace.

Two samples of Bombay mace supplied by a friend in Toronto, gave the following results:

—	C	D
Petrolic ether extractive	34·32	28·44
Sulph. ether "	25·04	27·56
Total extractive	59·36	56·00

These samples gave positive reactions with the Hefelmann and Schindler tests for Bombay mace.

The following work was done by Mr. Dawson upon a sample of commercial mace containing Bombay mace; and upon the components of this sample, separated as completely as possible, under the microscope.

—	The Sample.	True mace.	Bombay mace.
	%	%	%
Non-volatile petrolic ether extract	20·96	24·07	22·43
" ethyl " after petrolic	7·24	1·83	42·30
Total non-volatile ether extracts	28·20	25·90	64·73
Ash	1·75	1·70	1·37
Ash insoluble in HCl	0·10	0·07	0·07
Crude fibre	2·91	3·00	4·80

It must be borne in mind that separation of the components is only approximately exact. The sample contained as adulterants, cereal starches, olive stones and turmeric, in addition to wild mace. The analytical results, especially as regards the ether extractive after petrolic ether, are sufficiently marked.

The percentage of Bombay mace present in a mixture with genuine mace may be determined from the formula,—

$$X \text{ equals } \left\{ \frac{E - G\,(100 - X)}{100} \right\} \times \frac{100}{B} \qquad (1)$$

X is the desired percentage of Bombay mace.
E is the per cent of non-volatile ethyl ether extract after petrolic in mixture.
G " " " " for genuine mace.
B " " " " for Bombay mace.

If the maximum values of 5% for G and 35% for B. assumed as constants, then the formula becomes,—

$$X \text{ equals } \frac{10\,(E - 5)}{3} \qquad (2)$$

In the majority of cases this formula will give results considerably too low. Applied to the above mentioned mixture, 7·5 per cent is indicated by formula (2), whereas 10 to 15 per cent was found by actual separation. However, if as found the value of 1·83 be given to G, and 42·30 to B, and E for the mixture is 7·24 using formula (1), then 13·3 per cent is indicated which is in good agreement with the results obtained by separation.

It is of course, necessary that the solvents employed should be entirely volatile at the temperature of the water bath. In a comparison of results obtained on the same sample with.

a = ether, redistilled below 40° C.
b = " containing 4 per cent. alcohol.
c = petrolic ether, redistilled below 40° C.
d = " " distilled between 40° C. and 75° C.

Mr. Dawson obtained the following results:

NON-VOLATILE EXTRACTIVE.

A	B	C	D
28·28 28·50	28·54 28·48	20·51 21·03	20·91 21 01
Mean .. 28 39	28·51	20·77	20·96

The results prove that slight differences in the quality of the solvent do not greatly affect the extractive.

TABLE 1.

It is of interest to place on record the following analytical results obtained in these laboratories upon 30 commercial samples of mace which appear to be genuine or to contain traces only of foreign material.

Number.	Ash.		Non-volatile extraction.			
	Total.	Insoluble.	Petrol ether.	Ethyl ether.	Total.	Crude Fib.
2606	2·40	0·20	26·67	1·82	28·49	4·45
41871	3·30	1·05	24·00	3·91	27·91	4·90
41872	1·90	0·15	21·50	4·04	25·54	3·95
41873	3·65	0·35	28·66	4·92	33·58	6·75
53683	2·40	0·35	23·08	2·32	25·40	4·00
55022	2·25	0·20	26·82	2·34	29·16	3 95
56277	3·80	1·00	30·10	1·88	31·98	4·75
58388	1·75	0·10	28·74	1·76	30·50	3·60
59532	2·65	0·15	26·96	4·26	31·22	5·20
59535	3 55	0·35	29·22	4·66	33·88	6·00
61636	2·90	0·25	26·02	3·06	29·08	4 50
62361	2·00	0·05	26·06	2·18	28 24	4·10
63426	1 95	0·15	25·86	2·50	28 36	3·00
63429	1·85	0·02	25·86	2·24	28 10	3·80
66162	1·66	0·12	27 60	3·32	30·92	
60373	2·33	0·37	25·06	3·68	28·74	
61218	2·32	0·20	26·00	4 72	30·72	
64220	2·32	0·22	28·74	3·82	32·56	
58401			23·60	2·60	26·20	
58403			30·04	1·84	31·88	
58404			31·30	1·60	32·90	
70598			26·56	0·72	27·28	
70521			31·06	0 80	31·86	
70523			26·64	1·92	28·56	
70522			30·62	0·80	31·42	
69965			31·80	1·20	33·00	
54681			28·08	6·62	34·70	
54692			28·96	3·68	32·64	
58470			22·72	1·08	23·80	
61415	1·84	6·10	27·20	2·90	30·10	2·85
means	2·46	0·28	27·18	2·77	29·96	4 39

Table 2.

In the following table I have brought together data obtained upon 95 samples of commercial ground mace which were found practically free from added starchy material, and whose principal foreign content is presumably Bombay mace.

Number.	Ash.		Non-volatile Extractive.				
	Total.	Insol.	Petrol. ether.	Ethyl ether.	Total.	Cr. Fib.	X.
52266	2·00	0·25	26·04	33·36	59·40	3·85	....
52267	3·90	0·60	17·62	20·56	38·18	7 65	66
52268	2·65	0·30	26·62	23·36	49·98	5·60	76
52269	1·80	0·15	24·84	34·42	59·26	4·05	....
52270	2·10	0·25	23·72	32 32	56·04	4·05	....
55372	2·55	0·30	22 02	29·08	51 10	5·20	96
55373	2·50	0·75	23·44	29 70	53·14	4·40	99
61888	2·45	0·20	26·06	2[illegible]·82	52·88	5·20	88
66630	2·85	0·30	23·68	26·26	49·94	5·90	85
66636	2·55	0·35	24·64	28 02	52·66	5·55	93
66637	2·05	0 25	22·44	26·08	48·52	3·80	86
2135	2·10	0·30	26·58	17·76	44·34	3·80	56
2136	1·80	0·40	27·78	28·44	56·22	4·15	94
2137	2·15	0·15	26·12	22·48	48·60	4·25	73
2607	1·55	0·15	36·96	9·14	46·10	3·90	25
2844	3·90	0·75	22·30	23·06	45·36	6·75	75
41874	2·40	0·25	24·54	20·88	45·42	4·58	67
41875	2·10	0 15	26 84	9·92	36·76	3·80	28
51991	3·00	0·45	24·90	27·86	52·76	3·85	92
51992	3·15	0·45	24·18	25·92	50·10	6 85	85
51993	1·80	0·15	22·50	32·18	54 68	4 50	....
51994	1·90	0·30	27·54	34·46	62·00	4·10	...
51995	1·70	0·25	29·04	34·06	63 10	4·25	..
53685	1·90	0 20	21·54	26·36	47·90	5·45	87
55018	2·30	0·35	21·28	23·89	45·17	3·90	78
55020	2·90	0·45	25·78	27·10	52·88	6·90	89
56276	1·75	0·10	25·88	17·64	43·52	3 80	55
56278	1·85	0·40	26·50	32·78	59·28	5·00	..
56279	2·30	0·35	28·86	19·56	48·42	5·35	62
56280	2·00	0·15	23·82	15·78	39 60	5·80	49
59531	2·10	0·15	27·54	6·42	33·96	3·35	15
59534	2·00	0·20	23·72	24·98	48·70	4·35	77
61141	2·35	0·35	23·64	14·98	38·62	5·40	46
61142	2·45	0·25	27·44	27·26	54·70	5·60	90
61143	2·70	0·30	24·20	30·54	54·74	5·35	....
61144	2·26	0·20	22·50	15 16	37 66	4·50	47
61145	2·30	0·40	22 70	22·72	45·42	4·50	74
61531	2·20	0·25	20·20	27·42	47·62	4·20	90
61532	2·90	0·65	27·86	11·70	39·56	4·40	34
61533	2·50	0·25	26·38	24·24	50·62	4·45	79
61534	1·85	0·15	28·06	23 80	51·86	4·20	77
61535	1·95	0 15	26·34	18·44	44 78	4·20	58
61649	2·85	0·35	24 96	27·36	52·32	5·60	90
61926	3·05	0·50	20 38	34·46	54·84	6·30	....
61940	2·60	0·45	23 68	16·18	39·86	4·40	50
61942	2·75	0·45	29·36	10·58	39 94	4·90	30
62360	2·25	0·20	28·88	10·08	38·96	4·85	28
62363	2 55	0·40	21·96	18·44	40·40	5 15	58
63252	2·45	0·20	24·62	21·28	45·90	4·85	68
63254	2·35	0 45	24·60	32·02	56·62	4·95	....
63255	1·95	0·20	26·02	29·32	55·34	4·70	97
63256	2·05	0·15	24·54	20·66	45·20	4·05	66
63294	1·90	0·20	25·36	29·88	55·24	4·00	99
63295	1·95	0·15	25·82	19·66	45·48	4·95	63
63297	2·50	0 20	21·42	20·06	41·48	5·15	64
63298	2·50	0·25	24·28	25·08	49 36	4 90	82
63427	2·00	0·15	28·40	22·12	50·52	3·90	71
63428	2·20	0·15	26·14	7·18	33·32	4·45	18
63430	1·85	0·25	33·26	23·44	56·70	4·20	76
63751	3·00	0·15	26 84	17·96	44·80	8·05	57
63757	2·35	0·40	21·32	28 02	49·34	5·05	92
63760	1 90	0·15	27·16	23·66	50·82	4·60	77

TABLE 2—*Concluded.*

Number.	Ash.		Non-volatile Extractive.				
	Total.	Insol.	Petrol.ether.	Ethyl ether.	Total.	Cr, Fib.	X.
63764	3·10	0·15	27·70	20·78	48·48	8·25	67
63901	2·15	0·15	20·68	19·78	40·46	5·30	63
63903	1·75	0·20	24·00	32·66	56·66	4·05	...
63906	2·85	0·65	21·56	22·28	43·84	4·55	72
64006	1·75	0·15	28·80	19·60	48·40	3·80	62
64017	2·05	0·20	21·72	28·98	50·70	4·65	96
64024	1·90	0·25	22·06	37·90	59·96	4·65	...
56531	1·97	0·28	27·86	24·26	52·12	.....	79
56532	1·62	0·15	27·88	33·88	61·76	.....	...
56533	1·81	0·17	25·04	21·89	46·93	.....	71
56534	1·80	0·10	41·07	17·79	58·86	.....	56
56535	1·78	0·15	28·55	28·86	57·41	.....	95
66161	2·06	0·26	27·12	28·56	55·68	.....	94
66163	2·03	0·19	28·40	8·99	37·39	.....	24
66165	1·66	0·15	28·92	23·17	52·69	.....	75
60374	1·90	0·22	25·86	24·42	50·28	.....	80
60375	2·20	0·18	29·94	10·11	40·05	.....	28
64219	1·65	0·14	26·60	28·59	55·19	.....	94
64221	2·76	0·39	31·11	8·75	39·86	.....	24
61412	2·90	0·20	21·34	19·90	41·24	3·65	63
61413	2·40	0·22	18·28	31·98	56·26	4·95	...
61431	2·36	0·30	24·28	9·96	34·24	4·10	28
69966	.....	.....	24·32	24·00	48·32	.....	78
69967	.....	.....	29·44	22·18	41·62	.....	72
69968	.....	.....	27·44	11·24	38·58	.....	33
69969	.....	.....	26·10	16·00	42·10	.....	50
70535	.....	.....	25·70	10·76	36·46	.....	31
54504	.....	.....	24·68	10·54	35·22	.....	30
54505	.....	.....	20·58	20·36	40·94	.....	65
54688	.....	.....	25·70	23·40	49·10	.....	76
70262	.....	.....	22·00	9·68	31·68	.....	27
58469	.....	.....	26·60	24·06	50·66	.....	78
58471	.....	.....	24·00	8·66	32·66	.....	23

The trustworthiness of any formula employed to calculate the percentage of Bombay mace present in a mixture of this mace with the genuine, is dependent upon the accuracy of the constants involved. If we use as a basis of judgment the amount of extractive to ethyl-ether after petrolic, it is necessary to define the solvents, as well as the manner in which they are used; and also to determine the normal extractive by this method, for true mace and for Bombay mace respectively.

The samples enumerated in Table 2 were extracted in a Knorr apparatus, for 16 hours with petrolic ether (redistilled between 25° and 70° C.); then for a similar length of time with ethyl-ether (redistilled 35° to 37° C.) The extractive was dried to constant weight, at 110° C. The quantity operated on was 5 grams.

We have the following data for the extractive yielded by true mace:

	Per cent.	
Sample No. 1	1·14	Dawson.
" " 2	1·43	"
" " 3	1·55	"
" " 2606	1·82	"
" A	0·87	Valin.
" B	0·54	"
Sample separated from a mixture	1·83	Dawson.
Mean of 30 samples (see Table 1)	2·77	Various.
Penang mace	2·68	Parry.
Pale West Indian mace	2·04	"
Red " "	3·90	"
Sample No. 4	3·67	Valin.
" " 6	5·05	"
Mean value	2·25	

Data for extractive yielded by Bombay mace, under conditions above described:—

	Per cent.
Sample C	25·04
" D	27·56
Parry, Food & Drugs, page 237	29·11
Sample No. 5	32·69
Mean value	28·60

It will be noted that 14 samples of Table 2, yielded more than 30 per cent. extractive to ethyl-ether after petrolic. The mean extractive for these 14 samples is 33·35 per cent. Since these samples were found on careful qualitative examination to consist essentially of mace, it follows that some samples of Bombay, or other wild mace, must yield much more than the above average of 28·60 per cent. extractive. It is to be regretted that, at the time of writing this, I am unable to avail myself of fuller data for Bombay mace.

If we accept 30 per cent. as an approximate value for this mace, and take 2 as the corresponding number for genuine mace, the percentage of Bombay mace (x) in a mixture of the two maces, may be calculated from the formula,

$$x = \frac{100\ (e = 2)}{28}$$

where (e) is the extractive found for the sample.

The resultant values are given in the last column of Table 2. It must be understood that they are merely approximations to the actual percentage amounts of Bombay mace in these samples.

TABLE 3.

In this table I have arranged the results of analysis for 43 samples of commercial ground mace, found to contain other material than Bombay mace. In most cases this foreign matter is cereal or nutmeg starch, with turmeric.

Number.	Ash.		Extractive.			Crude Fibre.	Remarks based on microscopic examination.
	Total.	Insol.	Petrol.	Ethyl.	Total.		
55371.	1·45	0·15	18·65	24·88	43·53	3·15	Bombay mace and maize starch in large amount.
55374.	2·15	0·35	21·72	26·56	48·28	4·20	Much Bombay mace and small amount of starch.
55375.	1·85	0·15	20·06	25·10	45·16	3.95	Much Bombay mace and starch.
61893.	2·45	0·25	20·70	8·34	29·04	3·80	Small amount Bombay mace with much starch.
61895.	1·85	0·15	18·58	26·22	44·80	3·70	Much Bombay mace. Considerable starch.
68103.	2·05	0·25	19·28	22 54	41·82	3·80	" " "
68106.	2·85	0 20	18·88	10·28	29 16	4·80	Bombay mace small, much starch.
66619.	2·40	0·20	26·60	16·68	43·28	5·25	Bombay mace large amount and considerable starch.
66627.	1·75	0·15	23·06	25·48	48·54	3·10	Bombay mace much; also starch.
2608.	1·65	0·15	22·24	1·44	23·68	2·30	Much starch with turmeric.
55019.	2·00	0·25	19·47	27 72	47 19	4·80	Small amount starch much Bombay mace.
55021.	2·30	0·35	22·28	23·02	45·30	5·35	" " "
58386.	3·25	0·25	27·16	6·64	33·80	9 80	Bombay mace little, much starch.
58387.	1·55	0·10	24·12	0·74	24·86	2 25	Large amount starch, with turmeric.
58389.	3·20	0·30	26·78	6·38	33·16	7·85	Little Bombay mace and starch.
58390.	1·55	0·10	25·02	0·74	25·76	2·30	Much starch and turmeric.
59533.	3·30	0.70	24·20	10·32	34 52	5·05	Considerable Bombay mace traces of starch.
61620	2·20	0·45	21·84	25·58	47·42	4·65	Much Bombay mace.
61625.	1·90	0·25	19·08	21 24	40·32	3·50	" " little starch.
61641.	1·45	0·15	17·56	18·92	36·48	3·05	" " some starch.
61935.	2.05	0·10	27·66	17·44	45·10	3·65	Considerable Bombay mace and starch.
61938	2·30	0·45	22·12	24·00	46·12	4·70	Much Bombay mace, little starch.
62362.	2·05	0·10	25·56	0·58	26·14	3·20	Much starch and turmeric.
63253.	2·45	0·15	20·08	10·52	30·60	4·35	Considerable Bombay mace and starch.
63296.	2·70	0·35	23·08	21·60	44·68	4·95	Much Bombay mace, little starch.
63769.	1·95	0·20	19·06	28·76	47·82	4·35	Much Bombay mace and starch.
64021.	2·45	0·30	20·88	1·92	22·80	3·35	No Bombay mace much starch.
64023.	2·40	0·45	16·60	19·48	36·08	4·35	Much Bombay mace and starch.
66164.	1·81	0·17	26·78	17·50	44·28	.....	" " and some starch.
61414.	2·12	0·20	23·70	9·32	33·02	3·35	Some Bombay mace and starch.
58402.	.....	.....	24·48	1·16	25·64	.....	15 to 20% wheat starch.
58405.	.....	.....	23·80	1·68	25·48	.....	" " "
70261.	.....	.....	20·02	12·50	32·52	....	20 to 30% Bombay mace and starch.
70263.	.....	.....	23·04	26·68	49·72	.....	60 to 35% " "
70264.	.....	.....	18·96	25·62	44·64	.....	" " "
70265.	.....	.....	29·54	2·84	32·38	.....	No Bombay mace. 25 to 30% starch.
58467.	.....	.....	27·50	24·00	51·50	....	50 to 60% Bombay mace and starch.
58468.	.....	.....	27·66	1·92	29·58	.....	No Bombay mace, 25 to 30% "
67466.	.....	.....	25·42	0·66	26·08	.....	" " 10 to 15% "
67467.	.....	..	25.58	2·20	27·78	....	" " " "
67468.	.....	.....	20·18	0·36	20·54	....	" " 20% "
67469.	.....	.....	26·66	0·64	27·30	.....	" " " "
67470.	.....	.....	40·64	0·65	41 29	.....	Is ground nutmeg.

A study of the numerical results in Table III, taken in connection with the results noted from microscopic observation, leads to the conclusion that very definite inference as to the composition of these mixtures may be drawn from the extractive.

The presence of starch decidedly lowers the total extractive; while the ethyl-ether extractive plainly indicates the presence of Bombay mace. Where this is less than about 2 per cent. the absence of any considerable amount of Bombay mace is evident; and when in excess of 2 per cent. a close approximation to the actual amount present may be derived from a comparison of the ethyl-ether extractive with the total extractive.

The refractive index of the fixed oil from Bombay mace is given by Lythgae as varying from 1·4615 to 1·4633 at 35° C., while that from other maces varies from 1·4747 to 1·4975. The refractive indices for the fixed oils obtained from the samples included in Table 1, were read by Mr. Dawson at 35° C. and are found to be uniformly higher

than the maximum limit quoted for Bombay mace oil. Unfortunately this is also true for most of the samples recorded in Table 2, many of these, even when containing very high percentages of Bombay mace, (as judged from the ethyl-ether extractive) giving refractive indices of 1·4800 or higher. It would hence appear that, while the existence of a refractive index below 1·4700, points to the presence of Bombay mace, the finding of a higher reading than this cannot be regarded as evidence of the absence of Bombay mace.

The most conclusive chemical evidence of this adulteration of mace appears to be afforded by the ethyl-ether extract. In the case of Bombay mace, the resins seem to be less readily dissolved by petrolic ether than the fats. When these last are removed by petrolic ether, the subsequent extraction by ethyl-ether gives a number which is highly characteristic. It may be that alcohol, on account of its great solvent power for resins, might take the place of ethyl-ether, and effect a saving of time. This point may be investigated later.

Investigatory work done by Mr. Valin, since the above was written, has demonstrated certain points of importance in regard to details of operating. These are briefly:

1. The inadvisability of drying the sample at 100°—110° C. before extracting the fat and resins. Such treatment tends to make the extraction difficult.

2. The extractive matter is difficult to dry to constant weight, and an exposure of from 24 to 48 hours at 110° C. is required.

3. Extraction with petrolic ether is not usually complete in less than 16 hours.

4. The use of alcohol instead of ethyl ether, gives a somewhat higher extractive; but shows less characteristic difference between genuine and Bombay mace than does ether. For this reason it is not recommended.

The report now placed in your hands deals with 175 samples of mace, which are classified as follows:

Samples of known origin	7
" essentially true mace	30
" mixed with true and wild mace	95
" variously adulterated	43
Total	175

Their study would appear to justify the following standards for mace.

1. True mace is the dried arillus of Myristica fragrans (Houttyn.) It contains not more than three (3) per cent. of total ash, and not more than half of one per cent. (0·5) of ash insoluble in hydrochloric acid. Its crude fiber content does not exceed seven (7) per cent.

After extraction with petrolic ether, the ethyl-ether extractive does not exceed five (5) per cent. The total extractive by both solvents, does not exceed thirty three (33) per cent.

2. Macassar mace is the dried arillus of myristica argentea (Warb.)

3. Bombay Mace, is the dried arillus of myristica malabarica (Lamarck.) This mace must not be present in admixture with true mace, unless the label, or other mark clearly declares its presence, and approximate percentage amount.

It is recognized that the limited number of samples of certified origin included in this report, leaves much to be desired in the way of assured knowledge of the limits of variation which may obtain in different samples of the maces studied, where these are the production of different soils and localities. At the same time, I am convinced that no injustice will be done to importers by official adoption of the very liberal standards suggested; while a very much needed protection will thereby be afforded to the consumer.

BULLETIN No. 350—FEED FLOUR.

OTTAWA, November 2, 1916.

SIR,—I beg to hand you a report upon 170 samples of feeds, purchased under the name of Feed Flour.

This inspection has been rendered necessary in consequence of certain features of the operation of the Feeding Stuffs Act of 1909. These features were brought to your notice in my introductory letter published with Bulletin No. 311 (April, 1915). Briefly, they may be recapitulated as follows:—

Feeds which bear names of definite and distinctive character, are permitted to be sold without registration, because standards can be fixed for such feeds under Section 26 of the Adulteration Act.

The recognition of this class of feeds finds justification in the fact that all the smaller mills possess local markets for Bran, Shorts and Chop, as defined under our Act, and it is usual for farmers to buy direct from the mills. There is usually little or no accumulation of these feeds at the mill, the whole output being sold as produced. It would be an evident hardship were the miller required to keep distinct his product from each shipment of grain, and to furnish a guarantee of value with the sale. Such procedure would necessitate an increase in price to the consumer, and would not find favour with the farming community in whose interest the Act is framed. Experience gained since 1910 is decidedly favourable to recognition of a class of feeds of this kind; although the terms and standards fixed by Order in Council of May 1, 1911 (published as Circular G. 968) have been found to be unsatisfactory in several particulars.

Objections have been pointed out in Bulletins 254 and 311—and consequent upon these facts and others brought into notice through extended correspondence, it was considered desirable to invite comment by all parties interested, with a view to such amendment as might be found necessary.

In August of last year, a Circular (G. 1200) was extensively distributed through the kindness of the Canadian Manufacturers' Association, and through our own Food Inspectors.

Suggestions have been received from several of the larger milling companies and from a few of the smaller millers, but, upon the whole, it is felt that the subject has elicited less interest than its importance deserves.

Under the name of Special Shorts, or Choice Shorts, or Feed Flour or Low Grade Flour an article containing very nearly the same proteid and fat value as normal shorts, but a decidedly lower percentage of fibre, is offered. This variety is richer in starchy content than normal shorts, and is whiter in colour. Although its nutritive value is but slightly, if at all, higher than that of normal shorts, it commands a higher price, probably because of its appearance rather than for any other reason.

At a meeting of the Dominion Millers' Association held in Toronto on February 24, 1916, the present standards for the class of feeds now under consideration were discussed; and, amoung other business, a resolution was unanimously passed approving of the practical equivalency of the terms Shorts and Middlings, and recognizing the fairness of existing standards for this article.

It was however considered desirable and proper that an article generally known as Feed Flour, should be distinguished from Shorts; and the general impression prevailed that considerable latitude in the composition of this feed should be permitted. In order to obtain data for defining feed flour it was agreed that a collection of samples sold under this name should be made at an early date.

The samples herein reported were purchased in May and June of this year, for the purpose of establishing the nature of Feed Flour as sold in Canada.

Of 170 samples collected by our inspectors, under the name Feed Flour, 45 samples practically meet requirements for Shorts (Middlings) and must be regarded as such.

The outstanding feature in the article known as Feed Flour is its low content of fibre; and while frequently sold as Special Shorts or Choice Shorts, it is in reality a low grade flour. It usually commands a higher price than shorts proper, and appears to be regarded as superior to shorts, its superiority consisting in its whiter colour, its fineness, and its flour-like appearance. It usually shows a lower fat content than shorts, but its protein content is nearly equal to that of shorts.

It will be observed that I have excluded from the Feed Flour class all samples giving a higher fibre content than 2 per cent. From a large number of samples of flour examined by the Bureau of Chemistry, Washington, and reported in Bulletin 13, part 9, the following averages are taken:—

Patent Wheat flour (40 samples), crude fibre	0·21	per cent.
Common Market flour (19 samples), crude fibre	0·28	"
Bakers' and family (14 samples), crude fibre	0·22	"
Mean	0·24	"

In whole wheat flour, ground from the grain inclusive of its husk (bran) the crude fibre may amount to a little over 2 per cent; but all the samples now reported were evidently ground from the grain after removal of the bran; or the bran had been separated by bolting after grinding; and it is to a product closely resembling ordinary flour that the term Feed Flour is evidently intended to apply. Of the 125 samples now reported, 63 contain less than 1 per cent fibre; and 30 samples contain less than 0·5 per cent.

Fat Content.

Between 1 and 2 per cent fat	23	samples.
" 2 " 3 "	47	"
" 3 " 4 "	44	"
Above 4 per cent	10	"

Protein Content.

Above 18 per cent protein	6	samples.
Between 17 and 18 per cent protein	6	"
" 16 " 17 "	21	"
" 15 " 16 "	23	"
" 14 " 15 "	26	"
" 13 " 14 "	15	"
" 12 " 13 "	18	"
" 11 " 12 "	5	"
" 10 " 11 "	3	"
Below 10 per cent protein	1	"

It is scarcely necessary to add that no vital weed seeds were found in any of these samples. The fineness of grinding precluded the possibility of this.

If it be asked whether in view of the data now reported, the Department would be justified in recognizing Feed Flour as a distinct article from Shorts or Middlings, I must confess to some hesitation in arriving at a decision.

If the point be conceded, it would seem reasonable to require Feed Flour to

approximate in composition to ordinary flour, in which case the subjoined standards would apply::

Moisture	not to exceed	13·5	per cent.
Proteids	" less than	10·0	"
Fat	" "	1·0	"
Fibre	" more than	1·5	"

The suggested standards are based on the composition of flours of a low grade, such as might naturally be looked for in flour offered for sale as a cattle feed. With a single exception (No. 5725) all the samples reported would meet such a standard.

The alternative mode of treating these feeds would be to require them to be marketed as registered feed, and sold on the basis of guaranteed value. Many of them so considerably exceed the minimum values suggested as standards for Feed Flours, that it would doubtless be to the advantage of the manufacturer to adopt this method, and sell them as registered feeds.

Whether or not the convenience to manufacturer and to consumer would outweigh the loss to the manufacturer incurred by selling as feed flour an article greatly exceeding suggested standard requirements for this article, is matter for the consideration of both parties.

BULLETIN No. 351—BAY RUM, FLORIDA WATER, Etc.

OTTAWA, November 3, 1916.

SIR,—I beg to hand you herewith a report upon 75 samples of toilet preparations, chiefly Bay Rum and Florida Water, containing alcohol.

The Inland Revenue Act, as amended in 1908, requires all preparations containing methyl alcohol to be labelled in such a way as to inform the purchaser of the fact.

" Every person who uses methyl alcohol, or spirits containing methyl alcohol in any form, in any pharmaceutical, medicinal or other preparation intended for external use shall affix to the vessel containing the said preparation a label stating, in black letters not less than one-fourth of an inch in height, the presence of methyl alcohol therein; and every person violating the provisions of this sub-section shall incur a penalty not less than fifty dollars and not exceeding two hundred dollars."

Four samples of the present collection contain methyl alcohol in violation of the Act named.

BULLETIN No. 352—EVAPORATED FRUIT AND VEGETABLES.

OTTAWA, November 16, 1916.

SIR:—I beg to hand you a report upon 180 samples purchased by our inspectors in December, January and February last, as dried or evaporated Fruit and Vegetables.

The object had in view in this inspection was the ascertainment of the content of sulphur-dioxide in this class of foods. An order in Council of 4th April, 1914, published as Circular G. 1111, limits the amount of sulphurous acid (sulphur-dioxide) which may be present in solid foods to 1 part in 2,000 parts (equivalent to 500 parts per million).

Sulphurous Acid is largely employed in the bleaching of those fruits and vegetables

in whose case it is desirable to have the product as light coloured as possible. There is, of course, a temptation to use excess of the bleaching agent; and as this is more or less poisonous, above very narrow limits, it is important that a strict watch be kept upon the articles treated with it.

Our inspectors have, unfortunately, included a large number of samples in whose case the employment of a bleaching agent is unnecessary; such as prunes, raisins, currants, etc. These samples, which of course, contain no sulphur-dioxide, I have relegated to Table II in this report, and have merely reported upon their general soundness and cleanliness. The samples included in this report may be grouped as follows:

TABLE I.

Sample in whose preparation sulphurous acid is likely to be employed as a bleach.

Evaporated Apples	35	samples.
" Apricots	18	"
" Peaches	30	"
" Pears	4	"
Total	87	"

TABLE II.

Samples in whose preparation sulphurous acid is not required as a bleach.

Tinned goods	3	samples.
Prunes	36	"
Figs	12	"
Dates	3	"
Raisins	3	"
Pineapple	1	sample.
Vegetable soups	3	samples.
Candied peel	2	"
Currants	2	"
Dried carrots	1	sample.
" peas	1	"
" potatoes	1	"
" peaches	7	samples.
" apricots	9	"
" apples	5	"
" pears	4	"
Total	93	"

In the last five kinds sulphurous acid might be present; but these are included in Table 11 because, through oversight, its determination was not made in these twenty-six samples.

So far as the 93 samples of Table I are concerned, I find as follows:

Contain no sulphurous acid	19	samples.
" no excess sulphurous acid	47	"
" slight excess sulphurous acid	3	"
" decided excess sulphurous acid	18	"
Total	87	"

Eighteen samples containing above one and one half (1·5) parts of sulphurous acid per 2,000 parts by weight, I find:—

Containing 4 parts per 2,000	1 sample.	
" 3 "	5 samples.	
" 2 "	8	"
" less than 2 parts	4	"
Total	18	"

It is regrettable that this report has been so long delayed, due to press of work and the fact that our staff is shorthanded. I would respectfully recommend that no action be taken upon it, partly for this reason, and partly because it is a first inspection under our standards for sulphurous acid. A further and more extended inspection will be made at as early a date as possible.

BULLETIN No. 353—TEMPERANCE BEER.

OTTAWA, November 13, 1916.

SIR,—I beg to hand you a report upon 129 samples purchased by our inspectors in February, March and April last as Temperance Beer.

An Order in Council of February 8, 1911 and published as Circular G. 947 defines Malt Liquors and Malt Beverages as follows:

"1. Malt Liquor is a beverage made by the alcoholic fermentation of an infusion in potable water, of barley malt and hops.

2. Ale or beer is a beverage produced by top fermentation of an infusion, in potable water, of barley malt and hops; with or without other starchy and saccharine matters and contains in one hundred (100) cubic centimetres (20° C.) not less than two and seventy-five one-hundredths (2·75) grammes of alcohol (equivalent to six (6) per cent by volume of proof spirits), not less than three and one half (3·5) grammes of extract, and not less than eleven one-hundredths (0·11) gramme of ash, chiefly potassium phosphate.

3. Porter and Stout are varieties of ale or beer made in part from highly roasted malt, or barley, and agree, in other respects, with the requirements for ale and beer.

4. Lager Beer, is beer produced by bottom fermentation which contains, in one hundred (100) cubic centimetres (20° C.), not less than three and one-half (3·5) grammes of extractive matter and eleven one-hundredths (0·11) gramme of ash, chiefly potassium phosphate, and not less than two and fifty hundredths (2·50) grammes of alcohol, equivalent to five and five tenths (5·5) per cent by volume, of proof spirits.

5. Light Beer, is a Beer, containing in one hundred (100 cubic centimetres, at 20° C. less than two (2) grammes of alcohol (equivalent to less than four and four-tenths (4·4) per cent by volume of proof spirits)."

It will be observed that Beer (Ale), Lager Beer and Light Beer are defined. The last named may contain up to 4·4 per cent. of proof spirits.

The article known and extensively sold as Temperance Beer, or Non-alcoholic Beer, has appeared on our markets since the enactment of the above quoted standards, and is, undoubtedly intended to meet the requirements of the Anti-Liquor Laws recently passed by several of the Provincial Legislatures.

All the above named types of Beer defined by G. 947 are spirituous liquors, and as such are debarred from sale wherever the Anti-Liquor laws are in force. Brewers have quite naturally sought to meet the popular demand for an article resembling beer, and

possessing some of the properties of beer, by placing on the market a malt product which should contain so little alcohol as to permit its sale as a non-alcoholic beverage.

In defining fruit juices and other non-alcoholic drinks, it was found necessary to recognize the fact that, as most of these beverages contain fermentable material (sugars), small quantities of alcohol must naturally be present, due to unintentional fermentation in manufacture or in storage. The actual amount of such accidental alcohol might be very small; but practical conditions of bottling, transportation and storage make it possible for the alcohol—to increase in amount, after leaving the factory, and it was necessary to ascertain, by actual analysis, the facts of the case. It may be well to introduce here a brief summary of the data upon whose study a recommendation was made by your Advisory Board.

(Alcohol is stated in terms of proof spirit)

Bulletin No. 82, published in 1902, reported 15 samples sold as Unfermented Grape Juice:

2	samples	contained	no alcohol.
9	"	"	traces only.
4	"	"	amounts varying from 1·86 per cent. to 3·30 per cent.

Bulletin No. 94, published in 1904, reported 21 samples of Sweet Cider.

1	sample	contained	no alcohol.
15	"	"	less than 1·75 per cent.
5	"	"	more than 1·75 per cent. and up to 3·85 per cent.

Bulletin No. 166, published in 1908, reported 63 samples of so-called Unfermented Grape Juice.

51	samples	contained	no alcohol, or traces only.
1	"	"	less than 1 per cent.
2	"	"	less than 2 per cent.
1	"	"	less than 3 per cent.
5	"	"	less than 4 per cent.
2	"	"	less than 5 per cent.
1	"	"	above 5 per cent.

Bulletin No. 169, published in 1908, reported 15 samples of Sweet Cider.

10	samples	contained	no alcohol or traces only.
3	"	"	less than 1 per cent.
1	"	"	1·16 per cent.
1	"	"	2·48 per cent.

Bulletin No. 239, published in 1912, reports upon 36 samples of Sweet Cider, very few of which were entirely free from alcohol.

22	samples	gave	less than	1	per cent.
5	"	"	"	2	"
7	"	"	"	3	"
2	"	"	more than 3 per cent.		

Bulletin No. 280, published in 1914, reports 150 samples of so-called Soft Drinks. Most of these are free from more than traces of alcohol; but three samples of Ginger Beer contained over 3·50 per cent. proof spirits.

Bulletin No. 307, published in 1915, reports upon 111 samples of Unfermented Grape Juice. With few exceptions the alcohol does not exceed 3·50 per cent. (proof spirit), but scarcely any samples are entirely free from alcohol.

Experience gained since 1911 serves to strengthen my opinion that the limit fixed by Order in Council, in that year, is a reasonable one. Anything more exacting would work unnecessary hardship to manufacturers of Grape Juice, Sweet Cider, and so-called Soft Drinks.

It is of course, to be kept in mind that the number 3·5 per cent. proof spirit is a limit number, which will, under normal conditions of sale, be met with in soft drinks only at long intervals and in rare cases.

So-called "Temperance Beer" is, on the contrary, intended to be a non-alcoholic beverage only in the sense of containing not more alcohol than 3·5 per cent. while the manufacturer endeavours to work as close to this limit number as possible. It has even been urged that an occasional excess of spirit above 3·5 per cent. should not be held to constitute adulteration, since the fact that, as a rule, this class of beer contains no more than 3·5 per cent. of spirit proves the brewer's intention not to exceed this limit. Occasional excess is therefore clearly accidental and should be so regarded.

If Temperance Beer is given legal recognition—at present it has none—the above contention may be regarded as reasonable.

The report now placed in your hands concerns 129 samples sold as Temperance Beer. Of this number, 114 samples contain not more than 3·5 per cent. of proof spirit; and if the terms of the Order in Council of 8th February 1911 may be construed as applying to the article in question, these samples must be regarded as non-alcoholic beverages, under the Federal Act.

Several of the Provincial Acts fix 2·5 per cent. of proof spirit as the limit for temperance beers. Eighty-four (84) of these samples meet provincial requirements.

Fifteen (15) samples contain more than 3·5 per cent. In detail as follows:

3·71	per cent	1 sample.
4·12	"	2 "
4·26	"	1 "
4·40	"	1 "
4·52	"	2 "
4·64	"	1 "
4·76	"	1 "
4·89	"	2 "
5·01	"	2 "
5·37	"	1 "
5·98	"	1 "

Since Temperance Beer, under which name these articles were sold, is not recognized legally, it is questionable whether or not they can be judged as adulterated under the Act. Of course if we recognize this term as defining a non-alcoholic beverage, they contravene the Order in Council of 8th February 1911, and are adulterated.

In this connection it may be well to point out that the specific gravity of the alcoholic distillate has been interpreted by reference to the Hehner Tables. These Tables have, since 1884, when a special edition of them was published by this Department and distributed for the use of its officers, been accepted as official. I have not, however, been able to find any strictly legal sanction for their use in preference to other Alcohol Tables, variously authorized, with which they do not strictly conform.

I would respectfully advise the authoritative adoption of some one set of tables; and a set recently prepared under the direction of Sir Edward Thorpe, Principal of the Government Laboratories of Great Britain, would appear to be the best available. The Tables in question have been constructed with very great care, and are based upon the latest and most exact data in existence.

It is further to be observed that under ordinary conditions of working, there is a limit to accuracy practically obtainable. Very extended work in these laboratories leads me to conclude that the fourth decimal figure of the number expressing the specific gravity of a highly diluted alcohol may, even in careful hands, vary to the extent of one unit. This corresponds to an amount of proof spirit represented by approximately two-tenths (0·2) of one per cent. and I regard it as reasonable to allow a variation of this amount in interpretation. In other words, a beverage showing 3·70 per cent. of proof spirit, as the result of analysis, should not be held to exceed the legal limit of 3·50 per cent. by an amount which could justify legal penalty.

BULLETIN No. 354—GLUTEN FLOUR, Etc.

OTTAWA, November 16, 1916.

SIR,—We have on many occasions during recent years been asked to make an examination of the cereal foods offered especially for the use of persons suffering from diabetes mellitus. These foods, of which a considerable number are on the market, are usually high priced articles; and that they should be costly in comparison with ordinary cereal foods, is but reasonable, since if they fulfil their claim to contain a high percentage of cereal proteins, and in consequence, a comparatively small percentage of starch, their manufacture necessitates the employment of a correspondingly large amount of raw material, as well as the use of skilled labour.

The wrong done to sufferers from diabetes caused by misrepresentation of the character of these foods, is very apparent; and the demand that we should require foods of the class referred to, to meet definite standards is not at all unreasonable. It is acknowledged by physicians that the use of foods containing starch or sugar (glycogenic carbohydrates) in large amount, is dangerous to persons suffering from diabetes; and the whole class of foods to which I refer is characterized by relatively low carbohydrate content. That carbohydrates should be entirely absent is neither necessary nor desirable; but the degree of toleration of carbohydrates must be determined by the physician in each individual case.

It is evident that intelligent advice can only be given when the physician is correctly informed as to the composition of the food which he prescribes. Alike, then, from the point of view of physician and patient, it is necesary that dietary foods for the diabetic should be standardized; and the name under which such foods are sold, should carry a definite meaning.

The work of the Agricultural Experiment Station at New Haven, Conn. during the past five years (see reports for 1911 to 1915) has demonstrated that many of the special foods sold for the use of diabetics, are essentially fraudulent; and national attention has been called to the matter by the excellent work done in Connecticut and elsewhere. In consequence of this, the following decision has quite recently been issued by the Department of Agriculture at Washington.

FOOD INSPECTION DECISION 160.

Gluten products and "Diabetic" Food.

The following definitions and standards for gluten products and "diabetic" food were adopted by the Joint Committee on Definitions and Standards April 9, 1915, and were approved by the Association of American Dairy, Food, and Drug Officials, August 3, 1915, and by the Association of Official Agricultural Chemists, November 17, 1915:

Ground gluten is the clean, sound product made from wheat flour by the almost complete removal of starch and contains not more than ten per cent (10%) of moisture, and, calculated on the water-free basis, not less than fourteen and two-tenths per cent (14·2%) of nitrogen, not more than fifteen per cent (15%) of nitrogen-free extract (using protein factor 5·7) and not more than five and five-tenths per cent (5·5%) of starch (as determined by the diastase method).

Gluten flour is the clean, sound product made from wheat flour by the removal of a large part of the starch and contains not more than ten per cent (10%) of moisture, and, calculated on the water-free basis, not less than seven and one-tenth per cent

(7·1%) of nitrogen, not more than fifty-six per cent (56%) of nitrogen-free extract (using the protein factor 5·7), and not more than fourty-four per cent (44%) of starch (as determined by the diastase method.)

Gluten flour, self-raising, is a gluten flour containing not more than ten per cent (10%) of moisture, and leavening agents with or without salt.

"Diabetic food. Although most foods may be suitable under certain conditions for the use of persons suffering from diabetes, the term "diabetic" as applied to food indicates a considerable lessening of the carbohydrates found in ordinary products of the same class, and this belief is fostered by many manufacturers on their labels and in their advertising literature.

A "diabetic" food contains not more than half as much glycogenic carbohydrates as the normal food of the same class. Any statement on the label which gives the impression that any single food in unlimited quantity is suitable for the diabetic patient is false and misleading.

The foregoing definitions and standards are adopted as a guide for the officials of this Department in enforcing the Food and Drugs Act.

D. F. HOUSTON,
Secretary of Agriculture.

WASHINGTON, D.C., January 3, 1916.

It will be noted that the terms "ground gluten" "gluten flour" and "diabetic food" are more or less closely defined. In the present state of our knowledge, I do not think it practicable to be more specific than the requirements of the Decision above quoted.

The present report concerns 21 samples purchased by our inspectors under various names, but all evidently intended for the use of sufferers from diabetes. They may be classified as follows:

Gluten flour	9	samples.
Gluten meal	3	"
Gluten bread	3	"
Diabetic bread	1	"
Diet flour	2	"
Dainty Fluffs	1	"
Gum Gluten Granules	1	"
Casoid Biscuits	1	"
Total	21	samples.

In order to apply standards effectively it should be required of manufacturers that, in addition to whatever specific name they may chose to give their product, a subtitle should be used, and legibly printed on the label, fixing the special class:—ground gluten, gluten flour or diabetic food to which the article conforms.

It will be noted that ground gluten is required to contain at least 14·2 per cent. of nitrogen (equivalent to 80·94 per cent. protein, if the factor 5·7 is used, or 88·75 per cent if the usual factor, 6·25 is used); gluten flour, 7·1 per cent. nitrogen (equivalent to 40·47 or 44·375 per cent. protein) or half the amount contained in gluten.

Diabetic foods generally, are required to contain not more than half the amount of carbohydrates that a normal food of the same class would contain.

The starch limit for gluten is fixed at 5·5 per cent. and for gluten flour at 44 per cent.

Wynter Blyth (quoted by Allen 1, 459) gives the following proteid and carbohydrate percentages for wheaten bread:—calculated on the loaf containing moisture.

	Minimum.	Maximum.	Mean for Fine bread.	Mean for Coarse bread.
Water	26·39	47·90	38·51	41 02
Proteids	4·81	8·69	6·82	6·23
Carbohydrates	39·75	67·45	49·97	48·69

The average proteids and carbohydrates in ordinary bread, calculated upon the dry material, would therefore be.

For fine bread	Proteids	11·91 per cent.
	Carbohydrates	81·26
For coarse bread	Proteids	10·56
	Carbohydrates	82·55

According to this standard, diabetic breads should not contain above about 40 per cent. of carbohydrates, calculated upon the dry material; and by a parity of reasoning they should contain at least 22 per cent. of proteids.

I have used the following numbers as a guide in interpreting the results of analysis. It must be remembered that, in the absence of legalized standards, my conclusions must be regarded as merely expressions of opinion.

Limits for

	Proteids. (Minimum).	Carbohydrates. (Maximum).
Gluten	80	6
Gluten Flour	40	45
Diabetic Breads	20	42

Three (3) samples meet the required standard for gluten, and five (5) samples meet the standard suggested for diabetic flour or bread.

The remaining thirteen (13) samples do not justify any reasonable claim to be regarded as diabetic foods.

BULLETIN No. 355—BRAN.

OTTAWA, November 17, 1916.

SIR,—I have the honour to hand you a report upon 186 samples of Bran, purchased by our inspectors throughout the Dominion in February, March and April of this year.

Standards for Bran were legalized by Order in Council in October, 1910 (G. 932) and require this article to contain at least 14 per cent of proteids and 3 per cent of fat, with not more than 10 per cent of fibre. The Feeding Stuffs Act of 1909, Section 15, provides that a deficiency of one per cent of protein or fat, or an excess of two per cent of fibre shall not be held as evidence of fraudulent intent on the part of the manufacturer, so long as the total value of the feeding stuff in nutritive materials is substantially equivalent to its guaranteed value.

I am glad to say that all of the samples now reported fulfil legal requirements in respect to nutritive value. The great majority of these samples are indeed, considerably above the minimum value required for Bran.

SESSIONAL PAPER No. 14

In reply to a Circular of inquiry (G. 1200) distributed to the milling industry in August of last year, several of the larger milling companies contended that our standards for fibre in Bran were too high. They asserted that, while for most years the fibre in Bran might not exceed 10 per cent, in exceptional years, the fibre content would exceed this limit.

Regarding this matter, the subjoined data are available.

Source of information.	Year.	No. of samples examined.	No. exceeding 10% fibre.	Mean fibre p. c.
I. R. Bulletin 116	1906	29	19	11.11
" 156	1908	27	5	8.69
" 191	1909	148	39	9.26
" 231	1912	78	8	8.60
" 254	1913	135	8	8.80
" 302	1915	187	19	9.00
Connecticut	1905	25		9.90
Massachusetts	1912	28		8.73
"	1913	57		9.48
"	1914	54		9.48
"	1915	72		9 64
Pensylvania	1913	76		9.22
"	1914	46		9.14

It is to be kept in mind that the figures just quoted were obtained by work done upon commercial samples of Bran, many of which were adulterated by addition of oat-hulls and other matters containing fibre, hence the average results are decidedly higher than would be the case had only genuine wheat-bran been included.

So far as the present inspection is concerned, 35 samples (out of 186) show more than 10 per cent of fibre. Only 8 samples exceed 11 per cent and the highest fibre found is 11.95 per cent.

Section 15 of the Feeding Stuffs Act permits an excess of two per cent (maximum of 12 per cent fibre) provided that the total value of the Bran meets requirements. The particular sample now referred to shows 14.53 per cent proteids and 5.26 per cent of fat, so that the excess of fibre is fully compensated. The great majority of these samples fall well within the 10 per cent limit.

Under these circumstances I find no reason for advising reconsideration of the fibre standard for Bran.

Although from the point of view of nutrient value all the samples herein reported meet legal requirements. Fifteen samples are found to contain more than 25 noxious weed seeds per pound. The very liberal interpretation of the Weeds Seeds Act, in virtue of which we permit 25 seeds per pound is based upon the consideration that before these seeds have a chance of germination they are passed through the digestive system of animals to whom the Bran is fed, and it is reasonable to expect that a considerable proportion of the vital seeds in the feed will in this way have their germinating power destroyed.

Experimental work on this subject done in the Maryland Experiment Station in 1908, and quoted in Bulletin No. 254 of this Department, seems to justify the limit of 25 seeds per pound as reasonable. At the same time, it is to be noted that this limit has not, up to the present, received legal recognition.

BULLETIN No. 356—ASPIRIN TABLETS.

Ottawa, November 17, 1916.

Sir:—I beg to hand you a report upon 65 Tablets containing Aspirin analyzed in these laboratories.

Inspection of this article was made on account of complaints originating in Chicago, where Canadian made tablets were suspected to be spurious and fraudulent.

So far as the work recorded goes, it shows the Canadian made article to be of very good quality.

The tablets nominally contain 5 grains of aspirin, and the variations found are not in excess, for the most part, of normal variation for machine made tablets.

BULLETIN No. 357—CANNED TOMATOES.

Ottawa, 23rd November, 1916.

Sir,—I have the honour to hand you a report upon Canned Tomatoes, as purchased by our inspectors in February, March and April of this year.

Without exception the contents of these cans proved to be sound and good; and it is evident that care had been taken to employ only fruit of good quality in their preparation.

As in the inspection of 1912 (see Bulletin No. 246) the cans in which these tomatoes are packed, represent three sizes, which may be designated as large, medium and small.

Large size, from 950 to 1,050 cubic centimetres, or approximately from 34 to 37 ounces	199 samples.
Medium size, from 850 to 875 cubic centimetres, or approximately 31 ounces	27 "
Small size, about 600 cubic centimetres, or approximately 21 ounces	6 "

The small size tins are only found in Western Canada, 1 sample having been obtained in Manitoba and 5 samples in British Columbia.

The medium size appears also to be characteristic of Western Canada, 1 sample was found in the Eastern Townships, 1 in Ontario, 6 in Alberta, and 19 in British Columbia.

The subject matter of this report represents 88 different brands of Canned Tomatoes. By far the larger number of these are put up in tins of 34 to 37 ounces capacity, usually known as two pound tins.

Of course the value furnished to the consumer is dependent upon the content of actual fruit; and while it is a matter of great difficulty to determine this with any high degree of exactness, the method employed by us is probably as satisfactory as any that could be devised.

In all of the samples now reported, the gross weight of the tin and contents has first been ascertained. The whole contents are then turned out upon a piece of cheese cloth, of known weight, spread upon a sieve of six inches diameter, and allowed to drain for approximately two hours, without pressure, or until drops fall at intervals, of more than 5 seconds. The weight of residual solids is determined either by direct weighing, or by deducting the weight of the separated water.

The following method has been tentatively recommended by the Association of Official Agricultural Chemists of the U.S.A. (See Journal, August 15, 1915, p. 185).

"The preparation of the sample for analysis depends upon the character of the product and the determinations to be made. Samples in which only the solid or liquid portion is required should be treated as follows: Weigh the full can, open, pour off the liquid, allow the solid portion to drain for a minute, re-weigh the can and drained vegetables, then remove the solid portion and weigh the dry, empty can. The method selected for draining the vegetables is dependent upon the nature and condition of the sample. In most cases it is sufficient to cut around the cover and before turning it back allow the liquor to drain through the slit. Whenever a portion of the solid material would escape with the liquor by this procedure, drain upon a piece of cheese-cloth. From the weights thus obtained determine the percentage of liquid and solid contents."

The difficulty of defining a perfectly satisfactory method of working has delayed the adoption of regulations in the matter of Canned Tomatoes. The U.S.A., Bureau of Chemistry, under date 11 Oct. 1916 (see Service and Regulatory Announcements No. 184) makes the following statement:

"Since Circular 68 was issued, there are being produced in increasing quantities, tomato products of varying degrees of concentration. The Department is considering the adoption of a scale for testing tomato products, varying with the degree of concentration. If it is decided to adopt such a scale, public announcement will be given."

The information given by the report now handed to you, together with that supplied in Bulletin No. 246, should enable your Advisory Board to proceed intelligently in the matter of recommending action under Section 26 of the Adulteration Act, should action be considered necessary.

In order to a more convenient study of these data, I have arranged them in parallel columns with the corresponding results obtained in 1912 and published in Bulletin No. 246.

Most of the brands named are put up only in cans of large size. A small number of brands are put up only in medium and small sized cans. The following list, which includes samples inspected in 1912 as well as those now reported, shows the brands which are packed variously.

TABLE I.

Brands of Canned Tomatoes put up in tins of differing size. Inspections of 1912 and 1916.

Brand Name.	Large size.	Medium	Small.	Total.
Big	1	0	1	2
British Canadian	2	0	1	3
Canada First	7	3	1	11
E D. S.	3	0	1	4
Fretz	1	1	0	2
Kelowna	0	1	2	3
Lynn Valley	17	1	0	18
Maple Leaf	10	2	0	12
Orchard City	3	2	0	5
Prairie	5	1	0	6
Pride Niagara Falls	1	1	0	2
Pure Food	0	1	0	1
Quaker	6	7	3	16
Red Feather	1	1	0	2
Royal City	0	2	1	3
Standard of Empire	1	2	0	3
Thistle	5	4	0	9
Totals	63	29	10	102

Mountain Crest is put up in the small size only, and the following brands, in medium size only, so far as our inspections show: viz:—

Meco, Talisman, Alamo, Bear, Bohemian, Cutting P. Co., Del Monte, Finest, Faultless, Gold Medal Malkins Best, North Star, Sunshine.

TABLE II.

The following table gives the weight of the contents of small size tins. This weight refers to the solids determined as already described, and is stated in ounces.

Brand.	Number of Samples.		Total.	Weight of Contents.
	1912.	1916.		
Big	1	0	1	9·5
British Canadian	0	1	1	10·0
Canada First	0	1	1	8·2
E. D. S	1	0	1	14·4
Kelowna	2	0	2	12·0*
Mountain Crest	0	1	1	10·5
Quaker	1	2	3	8·6*
Royal City	0	1	1	8·0
Totals	5	6	11	10·1*

* Mean.

TABLE III.

Samples contained in Medium size tins.

Brand.	Number of Samples.		Total.	Weight of Contents.
	1912.	1916.		
Alamo	1	0	1	16·9
All Gold	1	0	1	18·8
Bear	2	0	2	16·9
Bohemian	3	0	3	16·5
Canada First	2	1	3	14·6
Cutting P. Co	2	0	2	17·3*
Del Monte	0	1	1	16·6
Faultless	1	0	1	12·9
Finest	0	1	1	14·0
Fretz	0	1	1	14·5
Gold Medal	0	2	2	11·8*
Kelowna	1	0	1	20·8
Lynn Valley	1	0	1	14·8
Malkins' Best	0	2	2	11·7*
Maple Leaf	0	2	2	12·5
Meco	1	0	1	13·8
North Star	0	1	1	14·3
Orchard City	0	2	2	13·2*
Prairie	0	1	1	13·3
Pride N. Falls	0	1	1	17·8
Pure Food	0	1	1	10·6
Quaker	4	3	7	14·7*
Red Feather	0	1	1	14·2
Royal City	0	2	2	14·5
Standard of Empire	0	2	2	12·4*
Sunshine	0	1	1	13·3
Talisman	2	0	2	12·9*
Thistle	2	2	4	14·4*
Totals	23	27	50	14·7*

* Mean.

Table IV.

Samples packed in large size tins.

Brand.	1912.	1916.	Total.	Solids (ounces.)
1 Air Ship	3	0	3	14·2*
2 Alexandra	0	2	2	14·3*
3 Anchor	0	1	1	12·5
4 Bell Cow	3	0	3	16·6*
5 Big	1	0	1	20·8
6 Bloomfield	1	0	1	20·9
7 Booths	1	0	1	19·4
8 Boulter	2	0	2	18·7*
9 Britannia	0	3	3	11·5*
10 British Canadian	0	2	2	15·1*
11 Burlington	0	1	1	15·0
12 Canada First	0	7	7	15·9*
13 Canada's Pride	2	0	2	19 8*
14 Canned Foods	0	2	2	15·7*
15 Clark	1	0	1	22·4
16 Colonist	0	1	1	14·2
17 Cottage	0	1	1	15·2
18 Crusader	0	7	7	15·4*
19 D. A. H	0	1	1	13·7
20 Degruchy	1	0	1	19·9
21 Dominion	0	1	1	13·5
22 Donalco	0	1	1	14·7
23 Dove	0	1	1	13·2
24 Dundee	0	1	1	16·5
25 E. D. S	1	2	3	16·4*
26 Edisons	0	1	1	15·5
27 Elgin	0	1	1	16·5
28 Essex	2	2	4	17·4*
29 Farmer	0	1	1	13·0
30 First Pick	0	2	2	20·9*
31 F. F. V	1	0	1	22·9
32 Fleur de lis	0	5	5	13·9*
33 Foote's Best	1	0	1	12·8
34 Frankford	0	3	3	17·6*
35 Fretz	0	1	1	18·1
36 Frontenac	0	3	3	16·2*
37 Garden City	1	1	2	17·1*
38 Gazelle	2	4	6	16·6*
39 Glenrose	2	0	2	22·0*
40 Gold	1	0	1	18·3
41 Gold Bond	0	3	3	16·1*
42 Golden West	0	1	1	16·0
43 Grand River	1	1	2	15·0*
44 Greens	0	2	2	15·0*
45 Harvest	0	4	4	16·6*
46 Harvester	1	0	1	16·4
47 Highlander	4	1	5	19·4*
48 Home Grown	1	0	1	21·6
49 Horseshoe	0	1	1	14·5
50 Hygeian	0	3	3	16·6*
51 Ice Castle	1	0	1	19·0
52 King Lake	0	1	1	15·2
53 Lasso	3	0	3	17·6*
54 Lily Vale	0	1	1	13·5
55 Lion	1	14	15	14·5*
56 Little Chief	8	21	29	15·4*
57 Log Cabin	0	6	6	15·4*
58 Lynn Valley	7	11	18	16·9*
59 Lucky Horseshoe	1	0	1	20 5
60 Maple Leaf	5	5	10	16·9*

*Mean.

Brand.	1912.	1916.	Total.	Solids (ounces.)
61 Meadow Sweet	1	0	1	19·7
62 Milden	1	0	1	20·4
63 Monarch	0	1	1	16·0
64 Northern	0	2	2	15·2
65 No Vary	0	2	2	17·7*
66 Old Arm Chair	0	5	5	14·0*
67 Old Church	0	1	1	16·3
68 Old Homestead	5	2	7	17·5*
69 Old Mill	0	1	1	16·0
70 Old Oak	0	1	1	15·2
71 Old Orchard	0	4	4	17.5*
72 Old Scout	2	0	2	17·8
73 Orchard City	1	2	3	16·6*
74 Oxford Choice	0	1	1	16·3
75 Parliament	0	2	2	12·8*
76 Peerless	2	0	2	18·0
77 Pelham	1	1	2	18·1*
78 Perfection	0	1	1	15·0
79 Pointer	1	0	1	19·0
80 Prairie	5	0	5	19·3*
81 Pride of Golden Hill	1	0	1	19·2
82 Pride of Niagara Falls	0	1	1	17·0
83 Primus	0	1	1	13·5
84 Prince Edward Pride	4	1	5	18·3*
85 Princess	1	1	2	17·7*
86 Prosperity	0	1	1	15·2
87 Prospectors	0	6	6	15·0*
88 Pure Food	1	0	1	22·3
89 Puritan	1	1	2	18·6*
90 Quaker	3	3	6	17·1*
91 Queen	0	1	1	15·5
92 Red Feather	0	1	1	14·5
93 Riverside	0	2	2	17·0*
94 Rose Hill	1	0	1	17·9
95 Royal	1	0	1	15·5
96 Sanitary	2	0	2	17·3*
97 Shield	2	0	2	17·1*
98 Standard of Empire	0	1	1	14·2
99 Star	1	0	1	19·6
100 St. Lawrence	0	2	2	14·5*
101 Sunset	1	1	2	19·1*
102 Swiss Bell	0	2	2	15·7*
103 Tartan	2	1	3	15·7*
104 Tauru	0	1	1	20·0
105 Tecumseh	5	0	5	17·9*
106 Thistle	2	3	5	16·0*
107 Three Stars	1	0	1	16·5
108 Triangle	0	1	1	13·5
109 Union	3	0	3	20·8
110 Vallee de Richelieu	0	1	1	14·5
111 Victoria	0	1	1	14·0
112 Vine	2	6	8	17·4*
113 Vulcan	0	1	1	13·5
114 White Rose	0	1	1	13·5

* Mean.

In many of the 114 brands reported in Table IV, where more than a single sample has been examined, great variability in the quantity of solids has been observed. I have selected a few of the brands—those in which at least six samples have been examined—in illustration of this variability.

TABLE V.

Name of Brand.	Total samples.	Solids (ounces).		
		Maximum.	Minimum.	Mean.
Canada First	7	16·5	15·3	15·9
Crusader	7	17·5	13·7	15·4
Gazelle	6	20·2	15·3	16·6
Lion	15	18·1	12·0	14·5
Little Chief	29	22·0	11·2	15·4
Log Cabin	6	16·0	14·5	15·4
Lynn Valley	18	23·2	14·2	16·9
Maple Leaf	10	24·3	12·3	16·9
Old Homestead	7	20·8	15·0	17·5
Prospectors	6	17·2	14·6	15·0
Quaker	6	19·6	15·0	17·1
Vine	8	22·5	14·0	17·4

The extremely large variation in amount of fruit solids contained in tins of similar size, and similar selling value, is noteworthy. If such differences are necessitated by the nature of the process of packing tomatoes, then surely there is great room for improvement in this art.

In Bulletin No. 246 I ventured to recommend that a minimum weight of fruit solids should be legalized for each size of can, and suggested the following:

For large size cans	20	ounces.
" medium " "	17	"
" small " "	12·5	"

It will be seen from Table V, that the suggested maximum for large sized tins is reached by six brands only, and this only as an exception; the mean contents for these six brands being 16·6; 15·4; 16·9; 16·9; 17·5; 17·4 ounces. It may be that the suggested minimum was too high.

The whole subject demands further consideration; and it is in the belief that the facts now recorded may be helpful in enabling a just conclusion to be reached that I, would respectfully advise publication of this report as Bulletin No. 357.

BULLETIN No. 358—CASSIA.

OTTAWA, December 6, 1916.

SIR,—I beg to hand you a report upon 143 samples purchased throughout Canada by our inspectors, as Cassia.

This spice, which finds extensive sale in Canada, has never been legally defined in such a way as to fix limiting values, and to enable us to declare its genuineness or otherwise.

Cassia closely resembles the spice known as Cinnamon, and indeed may be regarded as indistinguishable from the latter, so far as retail spice trade is concerned.

Cinnamon and Cassia are the dry barks of trees which belong to the same botanic genus, Cinnamomum. Cinnamon is the bark of C. Zeylanicum, chiefly grown in Ceylon and the East Indies; Cassia is the bark of C. Cassia, chiefly grown in China

and India. The former bark is thinner, lighter in colour and exists (commercially) in smaller rolls than Cassia bark. It is sufficiently easy to distinguish the two articles, in the unground state; and there is a considerable difference in price between whole cinnamon and whole cassia. The botanical elements of the two are, however, practically identical; and, in the finely ground state, it becomes a difficult, if not an impossible thing, to discriminate between them. The darker colour of Cassia is almost the only distinctive character that remains.

Whether cassia is inferior to cinnamon for flavouring purposes, in cookery, is an open question. The general impression is that cinnamon is preferable. Its higher price is doubtless due to this preference. At the same time it is certain that much, if not most, of the ground cinnamon of commerce, is really ground cassia.

Several grinders distinctly label their goods with the word Cassia; and it is probable that the same spicemen put on the market a higher priced article under the name Cinnamon; but of this I have no conclusive proof. It is however quite certain that the spice in question is known to most domestic users as Cinnamon; while the term Cassia conveys a very vague meaning, or no meaning whatever. Throughout Quebec the article is known as Canelle, which means cinnamon as distinguished from cassia, to which belongs the term Casse, seldom mentioned except as a drug.

From an interesting paper on the subject, by H. E. Sindall, Chemist to the Meikel and Smith Spice Co. of Philadelphia (Journal Industrial and Engineering Chemistry, 1912, 590) it appears that the classification of the article as Cinnamon or Cassia in commerce depends as much upon its source as upon its chemical or physical properties.

The British Pharmacopoeia defines Cinnamon bark (Cinnamomi cortex) which is required to be free from cork or woody tissues, and to contain not more than 5 per cent ash; but Cassia is not defined by the pharmacopocias.

So far as our experience goes, true Cinnamon, in the restricted sense, is but little if at all employed as a spice, in the ground condition.

Under these circumstances, it will be seen that a discrimination between cinnamon and cassia, as spices, is difficult to maintain. It is open to question how far we may take the darker colour of cassia, as evidence of its presence.

The difficulty of distinguishing between cinnamon and cassia, in the ground state, is recognized by the Committee of Standards at Washington, as shown by the following definitions proclaimed as legal for the United States in June, 1906.

Cinnamon is the dried bark of any species of the genus Cinnamomum, from which the outer layers may or may not have been removed.

True Cinnamon is the dried inner bark of Cinnamomum Zeylanicum, Breyne.

Cassia, is the dried bark of various species of Cinnamomum, other than Cinnamomum Zeylanicum, from which the outer layers may or may not have been removed.

Cassia buds are the dried, immature fruit of species of Cinnamomum.

Ground Cinnamon, Ground Cassia, is a powder consisting of Cinnamon, Cassia or Cassia buds, or a mixture of these species and contains not more than six (6) per cent of total ash, and not more than two (2) per cent of sand.

It will be noted that ground Cinnamon and ground Cassia are virtually recognized as identical; and this is in accord with actual experience.

The flavour of true Cinnamon is usually understood to be somewhat more delicate than that of Cassia; but on careful examination of the matter I am of opinion that the distinction has no value for purposes of a definition.

According to accessible literature, the article shipped as Cassia from China, Ceylon, Batavia and other sources, varies greatly in cleanliness; and it would seem that determination of the ash furnishes the most valuable datum in this regard. The total ash in a large number of samples reported by Sindall (Journal Industrial and Eng. Chemistry 1912, 590), representing extensive importations for the years 1908 to 1911, varied from about 3 per cent to about 13 per cent. The last quoted figure is however quite exceptional, and very few samples exceeded 7 per cent.

Six per cent appears to be a very reasonable maximum figure for a good article; and I have noted "ash excessive" in samples now reported, wherever the total ash exceeds 6 per cent or the insoluble ash (sand) exceeds 2 per cent.

Twenty two (22) samples show ash in excess of the suggested standard.

BULLETIN No. 359—TEA.

OTTAWA, December 30, 1916.

SIR,—I have the honour to submit herewith a report upon the examination of 250 samples purchased as tea. These samples represent the article as sold at retail, throughout Canada, and were purchased by the Food Inspectors of this department between April and July of the present year.

Advantage has been taken of this opportunity to make an exhaustive study of methods variously employed in ascertaining the extractive matters of tea. The importance and indeed the necessity of this investigation will be evident from the following résumé of correspondence, etc. in the matter.

The first systematic inspection of tea, under the Adulteration Act, was made in 1891, and is reported in Bulletin No. 24 of this department.

The work recorded in this report was done upon 58 samples of tea, examined by the late Professor E. B. Kenrick of Winnipeg. Professor Kenrick determined the extractive matter by what he called the Domestic Method, which he thus describes: "100 parts of boiling water are poured on 1 part of tea, and the infusion poured off at the end of 10 minutes."

His results are summarized as follows:

NATURE OF THE TEA.	TOTAL EXTRACTIVE.
Congou	23·37 per cent.
Unclassed Black	23·76 "
Average	23·56 "

NATURE OF THE TEA.	TOTAL EXTRACTIVE.
Gunpowders	28·55 per cent.
Young Hysons	34·22 "
Average	31·38 "

The Adulteration Act, Section 26, provides that the Governor in Council shall, from time to time, establish standards of quality, and fix the limits of variability permissible in any article of food.

No action has, up to this time, been taken in regard to tea, by the Department of Inland Revenue, and no standard is legally fixed under the Act named.

An Order in Council, dated 11th September, 1894, published by the Department of Customs, and apparently initiated by the Commissioner of Customs, contains the following regulations in regard to tea.

"Tea shall be considered as adulterated which contains leaves other than those of the tea-plant; or previously infused leaves or leaves of inferior quality to such an extent as to reduce the amount of extract or substances soluble in hot water to less than thirty per cent, or cause the proportion of ash soluble in hot water to be less than two and three-quarters per cent; or any admixture of chemicals or other deleterious

substances, or such an amount of mineral matter as will cause the amount of ash to exceed eight per cent reckoned on the sample dried at 100° C."

Since 1891, when Prof. Kenrick's work was published, systematic inspections of tea have been made by this department as follows:—

1904	73	samples.—	See	Bulletin	No. 99
1906	89	"	"	"	130
1909	222	"	"	"	183
1913	149	"	"	"	287

In the case of the inspection of 1913, I found myself justified in saying: "On the whole, this report may be taken to prove that there is no noteworthy adulteration of tea in Canada."

That such a state of things exists, must be largely credited to the care given by the Department of Customs, to control of importations. Instructions to Collectors of Customs were issued by the Commissioner in April 1895 (Memo. 740 B) and again in March, 1899 (Memo. No. 1035 B). The following Memo. No. 1414 B, at present governs in the matter.

No. 1414 B.

MEMORANDUM.

DEPARTMENT OF CUSTOMS, CANADA,
OTTAWA, May 31, 1907.

To Collectors of Customs:

PROHIBITION OF ADULTERATED TEAS.

The following instructions are substituted for Section 2 of Memo. No. 1035 B. of 1st March, 1899, concerning the Prohibition of Adulterated Teas:

2. Representative samples of the following classes of Imported Teas, when entered for consumption shall be sent to the Department of Customs at Ottawa to be tested, before such teas shall be released by the Collectors, viz.:—

(*a*) Representative samples of all teas from the United States not accompanied by Customs certificates of fitness for consumption in the United States.

(*b*) Representative samples of all tea dust.

(*c*) Representative samples of all teas costing twenty cents per pound or less in the country of growth, or costing when landed in Canada twenty-two cents per pound or less.

(*d*) Representative samples of all teas shipped on *consignment.*

Collectors may permit imported teas to be removed to the importers' warehouses pending test, subject to Custom control until released as fit for consumption.

JOHN MCDOUGALD,
Commissioner of Customs.

Mailed to Outports.

In a still earlier report (see Bulletin 130, p. 3) my predecessor in office made the following statement:

"On the whole it has to be stated that there is no evidence of adulteration to be found in the samples collected, although there are no doubt great variations as regards quality. This favourable showing is to be expected in view of the fact that the following clause under "Prohibited Goods" still forms part of the Customs Tariff: "1205. Tea adulterated with spurious leaf or with exhausted leaves, or containing so great an admixture of chemicals or other deleterious substances as to make it unfit for use. Nevertheless it is necessary that great care should be exercised in the inspection of teas as they arrive at the ports of entry, because, according to the report of the Prin-

cipal Chemist of Great Britain for the year ended March 31, 1906 (page 7), of the 2,917 samples (of tea) examined 259 were reported against, chiefly on account of the presence of foreign substances. It is not impossible that some of these rejected lots might find their way to Canada."

The Order in Council of 11th September, 1894 establishes the following limit numbers for tea:—

1. *Ash*—must not exceed 8 per cent by weight on the dry tea.
2. *Water Soluble Ash*—must not be less than 2·75 per cent.
3. *Extractive Matter*—must not be less than 30 per cent of the weight of the tea.

In my report of 1909 (Bulletin No. 183) I drew attention to the fact that variations in the method of working for determination of extractive matter result in great differences in the amount of extractive.

Thus, 157 samples out of 222 reported, yielded 30 per cent of extractive when treated as follows:—

To 5 grammes of the sample, ground to a tolerable degree of fineness, 200cc. of water is added, and boiled on a sand bath, in a glass flask for two hours. It is then thrown on a filter, and the residue washed 3 times with warm water. The filtrate and washings are made up to 250cc. and an aliquot portion is evaporated to dryness at 100° C.

Of 50 samples which failed to reach the standard limit of 30 per cent 31 were black teas, and 19 were green teas. It has been abundantly demonstrated that the average extractive matter in green teas is distinctly higher than in black teas, when the same method of working is employed.

Quite the most important feature of this report is the proof that changes in the method of determining extractive matter in tea so greatly affect results, that the fixing of a legal minimum of 30 per cent has no practical meaning unless the method of working for extractive is carefully defined. Four samples of tea, which yielded less than 30 per cent of extractive matter, when treated as above described, gave greatly increased yields on continued boiling.

Sample.	Extractive for 2 hours.	Extractive on longer boiling.
1	23·52	34·74
2	23·68	26·04
3	22·56	32·69
4	21·72	25·30

There can be no doubt that continuous boiling effects change in the celluloses of the tea-leaf, producing soluble bodies of the nature of pectins; and that this action goes on indefinitely; or at least for such a length of time as to make a sharply defined end point to continued solution impracticable. I pointed out the necessity of including in any definition of tea involving a minimum extractive, a description of the mode of making the extraction.

One of the largest English producers and importers of tea addressed the Secretary of the London Chamber of Commerce, under date, 20th October, 1909, as follows:—

"Dear Sir,—We should be obliged if you would call the attention of General Laurie, —Chairman of the Canadian Trade Section of the Chamber of Commerce—to Bulletin No. 183 of the Laboratory of the Inland Revenue Department, Ottawa, which contains a report by Mr. A. McGill (Chief Analyst) to the Deputy Minister of Inland Revenue on 222 samples of tea.

The wording of the report shows that he is dissatisfied with the method laid down by the Order in Council of 11th September 1894 for determining a method of analysis.

The Order in Council referred to fixed 30% as a minimum of extractive matter, without, however, defining the method by which the extractive should be made, and the Chief Analyst points out that differences in method of extraction show different results, and suggests that in consequence, there is a difficulty in deciding as to the quality of the tea. He expresses the opinion that the Order in Council should be definite in stating the exact method which the analyst should employ in order to arrive at the percentage of extractive.

This is a matter of the greatest importance to ourselves and to all firms who import tea into Canada, and at this stage we desire to express the opinion that there is no better method, or one that works more satisfactorily than that employed by H. M. Customs and which is not, we understand, governed by rigid methods. It is moreover so extremely technical that we are not capable of precisely indicating it. We may say, however, that the question of the prevention of the importation into this country of tea of very poor quality with a view to excluding all teas of a character detrimental to health or in any way adulterated was as lately as 1905 under the consideration of the then Chancellor of the Exchequer, H. M. Customs, and the London Tea Trade, and the view expressed was that the adoption of arbitrary standards based either on the chemical analysis of the product or on a definite size and make of leaf was unadvisable and tended to hamper trading conditions. This opinion was based on the personal experience of several members of the trade who had had experience of the working in the United States of America and in the Australian Commonwealth, of laws designed to exclude inferior teas; and they were, in consequence, able to point out that the adoption of arbitrary standards led to such grave dissatisfaction, that such standards had to be modified by the very experts responsible for adopting them, so as not to unduly hamper trading conditions.

There can be no doubt that the object to be attained is the provision of real protection both to the importer and to the consumer of tea—and we desire respectfully to suggest that if the Canadian Government would put themselves into communication with the London Customs Authorities and arrange for an exchange of ideas on the subject, it might be found that the method adopted by H. M. Customs in London is less complicated and more reliable than the system at present adopted by the Canadian Authorities, or any amendment of that system, such as indicated as desirable by the Chief Analyst. Indeed, we understand that the Australian Government at one time employed method similar to that now used by the Canadian Government, and abandoned it in favour of the method employed by H. M. Customs in London.

We know from previous experience the prompt attention which is paid by the Government of Canada to any representations which are endorsed by General Laurie, and for this reason we venture to ask for his valuable assistance in conveying to the Dominion Government our earnest desire that the suggestion indicated above, may receive the early and sympathetic consideration of the Deputy Minister of Inland Revenue."

In reply to enquiry as to methods in use by the London Custom House, I received the following letter from the Secretary:

CUSTOM HOUSE, LONDON, E.C.,
6th December, 1909.

SIR,—In reply to your letter of the 9th ultimo, addressed to the Right Honourable the Chancellor of the Exchequer, I am directed by the Board of Customs and Excise to inform you that the provisions governing the admission of tea into the United Kingdom are contained in the Sale of Food and Drugs Act, 1875 Sections 30 and 31, a copy of which is enclosed. It will be seen that there is no legal standard for the

percentage of extractive matter, (or other constituent) of tea; consequently no official method for the estimation of the extractive matter is prescribed.

In the ordinary course of examination of tea, however, the amount of extractive is of course taken into account by the Government Analyst, and the method employed is essentially the same as that adopted in Canada, i.e. the determination of the *total* extractive by complete exhaustion of the tea, as distinguished from the "domestic" method of partial extraction of the soluble constituents by infusion for a few minutes only.

The satisfactory results attributed to the British system of examination are probably due to the absence of any fixed analytical standards and the consequent discretion allowed to the Analyst to deal with each sample on its individual merits.

I am, sir,
Your obedient servant,

W. G. LEWIS.

The Chief Analyst,
Inland Revenue Department,
317 Queen Street,
Ottawa, Canada.

The provisions of the Sale of Food and Drugs Act, 1875, to which reference is made in the above letter, are as follows:—

Extract from the Sale of Food and Drugs Act, 1875.
38 and 39, Vict. Cap. 63.

Tea to be examined by the Customs on importation.

Sec. 30. From and after the first day of January one thousand eight hundred and seventy-six all tea imported as merchandise into and landed at any port in Great Britain or Ireland shall be subject to examination by persons to be appointed by the Commissioners of Customs, subject to the approval of the Treasury, for the inspection and analysis thereof, for which purpose samples may, when, deemed necessary by such inspectors be taken and with all convenient speed be examined by the analysts to be so appointed; and if upon such analysis the same shall be found to be mixed with other substances or exhausted tea, the same shall not be delivered unless with the sanction of the said commissioners and on such terms and conditions as they shall see fit to direct, either for home consumption or for use as ships stores or for exportation; but if on such inspection and analysis it shall appear that such tea is in the opinion of the analyst unfit for human food, the same shall be forfeited and destroyed or otherwise disposed of in such manner as the said commissioners may direct.

Interpretation of Act.

Sec. 31. Tea to which the term "exhausted" is applied in this Act shall mean and include any tea which has been deprived of its proper quality strength, or virtue by steeping, infusion, decoction or other means.

An examination of Mr. Lewis' letter, and of Sections 30 and 31 of the Sale of Food and Drugs Act, will show that the methods adopted by the London Customs Authorities, and so highly approved by importers of tea only differ from our own methods, and those sanctioned by the Canadian Customs Authorities, by being less exactly defined. The closing sentence of Mr. Lewis' letter suggests that "The satisfactory results attributed to the British system of examination are probably due to the absence of any fixed analytical standards, and the consequent discretion allowed to the Analyst to deal with each sample on its individual merits."

I think it must be conceded that this is a highly unsatisfactory state of things, considered from the consumer's standpoint. It has been shown that the extractive matter obtainable from tea may vary, for the same sample to the extent of eleven per

cent depending upon the length of time, and other conditions, of the extraction. In the absence of a strictly defined method of working, determination of extractive has no value whatever, and the fixing of a minimum value, below which the tea shall be regarded as adulterated, means nothing at all as a protection to the consumer.

Under these circumstances, it seems to me that the following points demand investigation:—

1. Is it reasonable and proper to fix a minimum limit for extractive matter in tea?
2. Should such limit be fixed without regard to the class of tea examined?
3. Under what conditions of working should determination of extractive be made?
4. What other determinations possess value in deciding as to the character of tea?

1. The value of tea is so evidently dependent upon the amount and character of the substances which it yields to hot water, that the first question appears to answer itself. The soluble matters of tea are essentially caffeine, tannin, proteins, gum, dextrin, colouring matter, mineral matter, with minute amounts of other substances.

The sophistication of tea by partial extraction, and subsequent treatment of the leaves with gum, rolling and drying, was at one time a very common practice, and doubtless obtains to some extent at the present day. The extractive matters thus obtained can be profitably employed for preparation of the alkaloid. It is apparent that the simplest way of ascertaining whether or not a sample of tea contains considerable amounts of exhausted leaves, is by determination of the extractive.

2. I have already pointed out the fact that black teas generally yield decidedly lower extractive than green teas.

The amount of extractive is affected to a considerable extent by the quality of the tea, the locality where grown, and the care taken in its preparation for market. With these differences, we are not concerned; the object had in view by the Analyst is not the grading of the tea as first or second quality; but the determination of its specific genuineness.

The following amounts of total extractive in black and green teas, are recorded by the authors named:—

Author.	Black.	Green.
Hassal (average)	33.85	41.20
Slater "	30.36	41.48
Battershall (average)	30.13	37.95
Kenrick (domestic method)	23.56	31.38
Y. Kozai (Japan teas)	47.23	53.74

While the above quoted results give speaking testimony to the need for adoption of an authoritative method for determining extractive, they prove conclusively that, no matter what method is used, black teas yield a decidedly lower extractive than green teas. This is quite in accord with our own experience.

It would seem unreasonable, on this account, to legalize the same standard for both classes of tea.

German standards for tea (Deutsches Nahrungsmittelbuch, 1909, p. 232) require at least 28 per cent extractive matter for green tea, and 24 per cent for black tea; and are the only standards known to me which recognize this difference of extractive in green and black teas.

3. The method of working for determination of extractive matters in tea employed in these laboratories, has been the following:—

(*a*) To 5 grammes of the sample, ground to a tolerable degree of fineness, 200 cc of distilled water is added, and boiled on a sand bath in a glass flask for 2 hours. It is then thrown on a filter, and the residue washed 3 times with warm water. The filtrate and washings are made up to definite volume, and an aliquot portion is evaporated to dryness at 100° C.

The Krausch method of working, recommended by the A.O.A.C. Washington (see Bull. Bureau of Chemistry No. 107, revised ,p. 147) is as follows:—

(*b*) Treat 20 grams of tea with 400cc. of water, and heat on a boiling water bath for 6 hours. Filter through a tared filter, wash with water until the filtrate measures 1000cc. Dry and weigh the residue. Determine the water soluble substance by difference.

This method is greatly modified in the latest revision of tentative standards (see Jour. A.O.A.C. Nov., 1916, p. 335) as follows:—

(*c*) To 2 grams of the original sample in a 500cc. Erlenmeyer flask add 200cc. of hot water and boil over a low flame for an hour. The flask should be closed with a rubber stopper through which passes a glass tube 18 inches long for a condenser. The loss from evaporation should be replaced from time to time by the addition of hot water. Filter through a tared filter and wash the residue until the filtrate measures 500cc. stirring the contents of the filter throughout the process to facilitate the filtering. Dry the filter paper and residue in the funnel in the steam oven until the excess of water is removed, transfer paper and contents to a tared weighing bottle and dry to constant weight at 100° C.

Allen (Organic Analysis, Vol. VI, 621) recommends the following:—

(*d*) 2 grams tea, in powder form, is boiled for 1 hour with 100cc. water. The liquid is filtered hot, and the residue again boiled with 50cc water and filtered. This process is repeated so long as any colouring matter continues to be extracted. Finally the decoction is made up to a definite volume and an aliquot portion is evaporated to dryness and weighed. As a check, the filter and contents are dried at 100° C. and the insoluble matters detached and weighed.

In all these methods, it is sought to obtain the total extractive matter. As I have already pointed out, there is a more or less considerable hydrolysis of the matters of the tea-leaf, with formation of soluble pectins, on continued boiling; and no definite end point is practically attainable. The same objection holds in the case of repeated extractions as recommended by Allen. A certain amount of colouring matter will be obtained from tea, on boiling with distilled water for an hour, even after many extractions. Wigner found in successive extractions of tea, powdered and boiled for one hour periods: (*a*) 22·90 (*b*) 8·17 (*c*) 3·75 (*d*) 1·75. Sum total, 36·57 per cent. But undoubtedly this figure could have been made 40 per cent or higher, by continued treatment of the same kind.

The methods which require filtration of the whole of the water employed in extraction are tedious, and frequently impracticable, owing to the clogging of the filter with gelatinous pectins. If a small filter be used, the operation is excessively tedious; if a large filter, there is possibility of considerable error in weighing.

The work herein tabulated comprises the results obtained by variously modifying the methods already described.

In 50 samples, representing collections in Nova Scotia, New Brunswick, Prince Edward Island and Quebec City, the method A is that described as (*a*) on page 13; method B is the Krausch method.

Mr. Forward remarks: "It was impossible to filter without heating, as some of the extractive precipitates out on cooling, and clogs the filter." He finds the first modi-

fication of the Krausch method impracticable Duplicates by method A are consistently within 0·5 per cent if conditions of filtering are the same. Extractive by method A is uniformly higher than by method B.

Forty-nine samples representing various portions of Quebec province, were worked by Mr. Valin, who used 5 grammes of tea, ground to pass through a sieve of 20 meshes per inch, with 500cc. water.

The methods employed in determination of extractive as reported herein, are essentially those already described on page 13—Slight modifications adopted by the analysts are detailed below, the letters referring to those placed at the head of the columns giving extractive in the tables.

A.—5 grammes tea, powdered to pass ¼ inch mesh; 200cc. water; boiled 1 hour; filtered at 75° C.—(Forward).

B.—20 grammes; 400cc. water; heated 6 hours—Filtrate to 1000cc. Residue is weighed.

Filtration found impossible in some cases. Duplicates not closer than 2 per cent. (Forward.)

C.—5 grammes tea, powdered to pass sieve of 20 meshes per inch; 500cc. water; boiled 2 hours; cooled; made up to 500cc.; filtered 50cc.—dried and weighed. (Valin.)

D.—Same as above; but boiled one hour only. Mr. Valin found that the amount of extractive is dependent to some extent upon the volume of the solvent. Thus:—

	Tea.	Boiled for			
		1 hr.	2 hrs.	4 hrs.	6 hrs.
Using 500 cc water.....	5 grms.	37.85	38.15	39.50	40.70
	2·5 "	.....	41.30	43.10	44.60
	1 "	43.25	.....	.....	.....

E.—Same as A but filtration at ordinary temperature of room. (Davidson.)

F.—Essentially Krausch method, and found unsatisfactory (Davidson).

G.—Krausch method, using 10 grams and 200cc. water, filtrate to 750cc.—washed with warm water.

G. (1) Krausch method—20 grms. 400cc. filtrate to 1000cc.—washed with cold water.

G. (2) As above, but 20 in 400cc.—filtrate to 1000cc.—washed with hot water. (Forster.)

Mr. Collier who worked by methods A and B says: "I have come to the conclusion that method A is by far the quickest and most reliable."

4. Determinations of moisture, tannin and caffeine are important, as serving to fix with exactness the character of a sample of tea. But these estimations cannot be regarded as of first importance in fixing the specific genuineness of the article. It is to be noted that this has no regard to the quality of tea, as dependent upon immaturity of the leaf, content of volatile oil, aroma, and other considerations which regulate market values. Tea selling at 25 cents per pound may be as truly genuine, in consisting wholly of the leaves of species of Camellia, as an article worth several dollars per pound.

For the purpose of ascertaining specific genuineness, it is usually sufficient to examine the botanical character of the leaf; while in order to detect exhaustion, facing, etc., it suffices to determine ash and extractive.

For purposes of legal definition, it suffices to consider the following:—

1. Botanical character of leaf, bud and stalk.
2. Microscopic examination for "facing", etc.
3. Total ash per cent.
4. Water soluble ash per cent.
5. Extractive; as obtained by a strictly defined method.

As regards the samples (250 in number) of the present report:—

1. No leaves, other than those of the tea plant have been found.
2. No "facing" of the leaves is reported as having been verified by the microscope.
3. The total ash varies from 5 per cent to 7·68 per cent.

In greater detail:—

From	5·00	to 5·50	per cent	43 samples.
"	5·50	" 6·00	"	115 "
"	6·00	" 6·50	"	70 "
"	6·50	" 7·00	"	16 "
Above 7 per cent				4 "

4. Water soluble Ash:—

Above	4	per cent		17 samples.
"	3·5	"		121 "
"	3·0	"		97 "
"	2·5	"		13 "
Below	2·5	"		none.

5. Extractive.

On account of the variety of methods employed in determining extractive, it is impossible to summarize results.

It may be noted however, that the great majority of samples treated by method A, or its modifications, yield from 35 to 40 per cent extractive.

There is observed a difference of about 3 to 4 per cent between green and black teas, worked by this process.

The only samples yielding less than 30 per cent extractive, are the following:—

——	Ash.		Extractive mean.
	Total.	Soluble.	
No. 56732 (black)	6.33	2.57	24.46
No. 4335 (black)	6.40	2.60	25.70
No. 67868	6.48	2.82	23.60
No. 67347	6 30	2.72	24.80
No. 73144 (black)	6.64	3.28	26.19
No. 73147 (black)	5.80	3.10	26.49
No. 72845 (black)	5.80	2.66	24.22
No. 71830	5.82	3 28	27.45

These are all very low grade teas; and, in the event of standards being established under Section 26 of the Adulteration Act, I have no doubt that they would be found adulterated.

The necessity of legalizing standards for tea is self-evident. Without them Canada is likely to become a dumping ground for tea unable to find a market elsewhere.

BULLETIN No. 360—BAKING POWDER.

OTTAWA, January 17, 1917.

SIR,—I beg to hand you a report upon 213 samples of Baking Powders, purchased by our inspectors during the period, June to August of last year.

This important food material has been made the subject of systematic inspection on five different occasions before the present; and was last reported in March 1915. (Bulletin No. 308.)

The main reason for the present report is the desire to establish a standard for available gas, below which amount the article shall be held illegal. Apart from considerations of the wholesomeness of the ingredients and the harmlessness of the residues left in the bread, it is evident that the gas-producing power of baking powder is its most important character. An article which has been so badly made, or which has so much deteriorated through prolonged keeping, as to be incapable of yielding a reasonable volume of gas, is necessarily disappointing to the baker, and, beyond fixed limits, which should be legally defined, must be regarded as fraudulent.

The generally accepted and what may be regarded as the normal baking powder is expected to yield from 12 to 13 per cent. of gas (weight) when freshly made. The nature of Cream Tartar, which was the original acid ingredient of baking powders, doubtless determined this figure, which has been so long, and so widely accepted that any considerable departure from it would be confusing to the baker. (Bull. 308, p. 4.) Although burnt alum and other acid components which have more recently come into use in baking powders, are capable of producing a much higher percentage of gas, they have usually been reduced in strength by addition of starch or other neutral material so as to conform to the strength of Cream of Tartar.

The nature of a mixture of bicarbonate of soda with any acid substance is such that gradual interaction of the components must occur on prolonged keeping; and unless kept very dry and cool, this interaction may be quite rapid, and must result in the loss of so considerable an amount of gas as to render the article valueless for baking purposes.

The States of Florida, North Dakota and, I believe, some others as well as the Government of Western Australia (Gazette, July 17, 1914) have fixed 10 per cent of gas as the minimum limit for a legal Baking Powder. The following tabulation of results obtained by this Department is of interest:

Date of Inspection.	Number of Samples in which CO_2 Determined.	Average Gas p.c.
1889	149	8·17
1900	156	9·80
1908	158	10·24
1911	150	11·00
1914	251	11·31
1915	195	11·91

The averages quoted include, of course, a certain number of samples whose content of gas fell short of 10 per cent; nevertheless the means found are well above this limit, and show continuous improvement in the quality of baking powder, from the point of view of gas production.

Details of gas producing power for the last two inspections are of interest:

Available Gas.	Inspection of 1915.	1916.
Above 13 per cent.	48	53
" 12 "	52	56
" 11 "	62	51
" 10 "	45	13
" 9 "	12	6
" 8 "	15	6
" 7 "	5	4
" 6 "	5	4
Below 6 "	7	2
Total	251	195

It will be seen that 82 per cent. of the collection of 1915 and 88 per cent. of that of 1916, yielded more than 10 per cent. of gas. I am of opinion that 10 per cent. of available gas is a reasonable limit, below which a baking powder should be regarded as illegal.

It is however to be noted as important that a well defined method of working should be employed in estimating available gas. This is necessary because of the very difficult solubility of burnt alum, and because of the slow decomposition of bi-carbonate of soda at a boiling temperature, quite apart from the reaction of this salt with the acid ingredient of the powder. Bi-carbonate of soda is usually present in slight excess of the amount required to neutralize the free acid of the sample. Macara (Analyst, 1915, p. 272) has shown that this reaction, on sufficiently prolonged boiling, may go on until the sesqui-carbonate is formed; in other words, until 25 per cent. of the carbonic acid in bi-carbonate is driven off.

As already stated, the question of method has been especially studied, during the progress of the work herein reported. Three general types may be noted:

1st. Methods involving the absorption of liberated gas by soda-lime or by solution of potash (gravimetric.)

2nd. Methods involving the absorption of the gas in measured excess of soda or barium hydrate solutions, and subsequent titration of the excess of absorbent (volumetric.)

3rd. Collection of the evolved gas over saturated solution of common salt, and measurement at definite temperature and pressure (gasometric.)

The effect of prolonged boiling; ratio of weight of sample to volume of solvent, and other points, have also been studied.

As the result of our investigations the following method of determining available gas in Baking Powders is recommended.

From 1 to 2 grams of the sample is used; this is boiled with about 100cc. water for 10 minutes from the time when boiling begins; with aspiration of a slow current of air which carries the liberated gas through a series of U tubes, etc., arranged as follows:—

1. A short Liebig condenser, arranged so as to return the condensed steam to the boiling flask.

2. A U tube (or tower) containing pumice saturated with strong sulphuric acid.

3. A smaller U tube containing fragments of pumice saturated with strong sulphuric acid; or lumps of fused calcium chloride, which must be neutral.

4. A U tube containing soda-lime or Liebig bulbs containing 30 per cent. soda solution.

5. Duplicate of (4.)

6. A U tube like (3.)

7. Same as (6) and connected at exit end to an aspirator or suction pump.

(A T tube should be interposed between the exit end of number 7 and the suction. The third leg of the T tube carries a piece of rubber tubing and a pinch cock. The

suction may then be turned on full, and the rate of the air current regulated by the pinch cock.)

U tubes 3, 4, 5 and 6 are weighed. Number 3 should not materially gain weight, and serves to protect 4 and 5. The increase in weight should be almost entirely confined to No. 4. When No. 5 begins to show notable increase in weight, No. 4 should be freshly charged.

After 10 minutes boiling the heat is turned off, but aspiration is continued for 20 minutes longer.

The decomposition flask may be charged with the sample and the water added through a funnel tube reaching nearly to the bottom of the flask; or, more conveniently by first charging with water, and dropping in the sample, wrapped in tissue paper immediately replacing the rubber cork which carries the funnel tube and the exit tube.

The air aspirated through the apparatus may be freed from carbonic acid by a soda lime tube, above the funnel tube. This precaution is not usually necessary, the error due to atmospheric CO_2 being so small as to be negligible. It is also desirable to have an absorption bottle immediately before the suction tube in order to observe conveniently the rate of the air current. A negative pressure must be maintained during the whole operation; but the rate of flow of air should not exceed three bubbles per second.

The source of the leavening gas, is always bi-carbonate of soda. The acid component, by which the gas is liberated, is Tartaric acid, either free or as Cream of Tartar; Sulphuric acid, as one or other of the dessicated alums, (usually soda alum) or Phosphoric acid, employed as Acid phosphate of lime, or as acid phosphate of soda. Sometimes mixtures of these are found, and, very commonly, alum and acid phosphate of lime are found together.

I think it desirable that manufacturers of Baking Powder should be required to state, on the label, the acid component used. The consumer has a right to this information, as also has the physician. Although investigation by a Board of experts of recognized competency (see Bull. No. 103, Department of Agriculture, Washington; or, Bulletin No. 308 of the Inland Revenue Department, Ottawa, p. 6) has shown that "When aluminium compounds are mixed or packed with a food, the quality or strength of said food, has not been found to be thereby reduced, lowered, or injuriously affected," many physicians, and a very large number of laymen are far from convinced that the continuous use of alum is without harmful effect upon the health. Indeed the report above referred to contains the following: "Aluminium compounds when added to foods in the form of baking powders, usually provoke catharsis. This action of aluminium baking powders is due to the sodium sulphate which results from the reaction." The inhibitive effect of alum upon gastric digestion is well established (Bulletin No. 68, Inland Revenue Department) and the great insolubility of dessicated alum compels the inference that alum as such, remains in the bread, in all cases where an alum baking powder has been used.

Albumen in Baking Powders.

The addition of albumen to a baking powder would evidently increase its value, provided that the amount of albumen added was at all considerable. As a matter of fact, albumen to the amount of about $^{15}/_{100}$ of 1 per cent. of the weight of the powder has been found in some baking powders. It is inconceivable that such an addition can have any appreciable value, as rendering the article superior in baking. It is contended that the true reason for this addition of albumen is found in the fact that, on adding water to such a powder, the increased viscosity causes a persistent froth to be formed, and thus furnishes the vendor with a means of demonstrating apparent superiority, in comparison with other powders, which do not contain albumen. Of course such a use of the article is plainly for purposes of fraud; and several States of the

American Union have forbidden the addition of albumen to baking powders, because of the fraudulent use of what is called the "Cold Water test" or "Water glass test" and the fact that the amount of albumen is so small as to possess no tangible value. It is scarcely necessary to add that, albumen being in itself a desirable food product, we cannot under the Adulteration Act, forbid its addition to Baking Powders. No intelligent buyer will permit himself to be deceived by the water glass test; and should actual deception be practiced, anyone has recourse under the common law.

Egg-Substitutes.

These are, for the most part, merely baking powders, to which has been added wheat flour rich in gluten; casein, or other proteid matter, and a yellow dye. This last is used to simulate egg-yolk; and possibly to deceive the purchaser into a belief that egg is present in the article.

The Government of Western Australia has legislated as follows: "The word 'egg' and expressions or devices which imply or suggest the presence of egg, or the equivalent of egg, shall not be written on, or attached to any package which contains baking powder." Gazette, 17 July, 1914.

I regard this action as right and proper. The high price of eggs tempts the baker to purchase anything that promises to be a substitute; and in this way, an article of little cost and of less value, is able to secure sale at an exorbitant price. The artificial colouring of a so-called egg powder, so as to make it resemble egg-yolk, should be forbidden by law.

Another class of egg-substitutes, not containing gas producing components is found on the market. For the most part, these articles consist of casein, with flour, some fat and a little sugar, coloured with a yellow dye. Fancy names like Egg-o-let, sub-egg-o, etc., have been coined for some of them. In all such articles, a plain statement of composition should be required on the label; and the employment of a dye should be forbidden.

It is hoped that this report will supply data upon which to establish standards for Baking Powder under the sanction of Section 26 of the Adulteration Act.

BULLETIN No. 361—PREPARED MUSTARD.

Ottawa, January 19, 1917.

Sir,—I beg to hand you a report upon 124 samples of so-called Prepared Mustard purchased by our inspectors during the period April to July of last year.

This inspection was ordered consequent upon representations made to the Department to the effect that adulteration of the article was largely practised by manufacturers who use starch, turmeric and pepper instead of mustard.

It must be noted here that standards for the article known as Prepared Mustard have not been legalized in Canada. We have found it impossible, up to the present, to define Mustard itself; due to conflicting evidence as regards charlock or so-called wild mustard. It is expected that standards regarding Mustard will shortly be submitted by your advisory Board.

Prepared Mustard clearly implies the presence of Mustard. What else it may imply, is not so clear.

The name Mustard indicates that this spice was used originally as a condiment by mixing the seeds with unfermented wine (*Latin, Mustum*) and so-called *German Mustard* is to this day prepared with Rhine wine, or tarragon, vinegar, spices, etc., while *French Mustard* is prepared with salt, vinegar, spices, etc. (Webster's dictionary). It is quite apparent that so-called Prepared Mustard is merely a condiment,ready for use, and having Mustard as its most characteristic component. There are probably as many formulas for the preparation of the article, as there are manufacturers of it.

It would, of course, be possible to forbid the use of certain substances in the manufacture of prepared mustard; or even to legalize a fixed formula for the article. Unless, however, the forbidden articles were shown to be unwholesome, or added for purposes of fraud, such interference with trade, would, in my opinion, be entirely foreign to the intention of the Adulteration Act. So long as only sound materials of a wholesome kind are employed; and mustard is used as the chief ingredient, I think that a free hand should be given to manufacturers. Competition, and the discrimination of the public, must decide the question of superiority.

As in the case of all foods, it must be understood that no false claims appear on the label. It would seem reasonable to expect an honourable rivalry among manufacturers for the production of the most satisfactory condiment, having mustard as a base; the crux of the claim being not so much that the article is prepared mustard, as that it is Brown's, Jones' or Robertson's prepared mustard.

Tentative Standards, published as Circular 19, June 26, 1906, by the Department of Agriculture, Washington, define *Prepared Mustard* as follows:—

"Prepared mustard, German mustard, French mustard, mustard paste, is a paste composed of a mixture of ground mustard seed or mustard flour with salt spices and vinegar, and calculated free from water, fat and salt, contains not more than 24 per cent of carbohydrates calculated as starch, determined according to the official methods; not more than 12 per cent of crude fibre nor less than 35 per cent of protein, derived solely from the materials named."

The total proteids of mustard flour may be taken as about 30 per cent. (Allen Org. Analysis, 4th edition, vii, 107). Based on this figure, the above requirements for Prepared Mustard demand that the whole of the dry material of prepared mustard free from fat and salt, shall consist of mustard flour, or equivalent protein containing spice, thus excluding starch altogether. It is therefore difficult to see why any mention of carbohydrates is made.

I am not aware of any decisions by the Courts which establish the validity of the above standard. A case is reported (U.S.A. Notice of Judgment, No. 1552) in which misbranding was alleged because wild mustard (charlock) was substituted for the usual product, and turmeric was present without declaration on the label. A verdict of not guilty was rendered.

The question of recognizing charlock as a condimental mustard cannot be considered here. It will be discussed in our next report upon mustard.

An interesting paper by Barnard & Bishop, dealing with Prepared Mustard was read before the American Association of Food, Dairy and Drug Officials at Seattle in 1912. Of 32 samples analysed 17 failed to meet the requirements of the above suggested standard, 10 contained excess carbohydrates, 2 an excess of crude fibre, and 4 samples were too low in protein.

The authors suggest a minimum of 15 per cent solids, exclusive of salt, as a desirable additional requirement, thus preventing "infinite dilution" of the article. It seems to me undesirable that our standards should take into account any constants

regarding which the ordinary consumer is as well informed, and as competent to judge, as the analyst, and it is open to question whether this is not the case with the degree of dilution of a prepared mustard.

Forty-four samples herein reported have been examined in such a way as to enable me to state the percentage of solids, other than salt and fat. These show as follows:—

No.	Solids (less salt and fat).	Starch.	Difference (mustard).	Salt.	Fat.	Carbohydrates p.c. on solids, less salt and fat.
54294	23·58	12·60	10·98	0·23	0·79	53·4
69495	23·23	11·86	11·37	0·30	1 05	50·3
†69445	18·85	10·93	7·92	0·56	3·59	58 0
71869	11·85	2·32	9·53	2·67	3·76	19·5
*69441	18·04	9·80	8·24	1·33	1·28	54 2
52457	8·88	1·61	7·27	2·74	0·92	18·1
71579	8·06	1·61	6·45	2·72	1·64	19·9
71842	8·86	2·25	6·61	1·74	2·10	25·4
69493	8·71	2·07	6·64	3·21	1·16	23·8
69492	8·58	2·23	6·35	3·40	1·10	25·9
73222	8·44	1 81	6·63	1·61	1 61	21·4
69443	7·09	1·61	5·48	2·46	1·65	22·7
52460	15 37	7·03	8·34	2·31	1·94	45·7
52459	14·36	7·18	7·18	2·26	4·00	50·0
71841	14·33	2·81	11·52	2·97	5 66	19 6
54292	14·37	2 82	11 55	1·52	7·39	19 6
73226	13·79	2·70	11·09	2·50	6·66	19·5
69491	13·12	2·61	10·51	2·27	6·59	19·8
52461	13·89	3·20	10·69	2·72	7·34	23·0
69494	13·55	2·49	11·06	1·42	1 23	18·3
52458	12·96	2·36	10·60	3·42	6·22	18·2
4974	12·60	4·55	8·05	1·75	2·17	36·1
71840	11·00	2·24	8·76	3·16	3·74	20 5
56741	12·17	3·66	8 51	1·68	3 66	50·0
56743	11·86	3·85	8·01	1·85	4·00	32·4
54295	11·89	2·81	9·08	1·08	4·95	23·6
54291	10·77	2·29	8·48	1·01	1·64	21·3
54293	10 38	2 39	7·99	0·09	2 69	25·0
71571	10·70	2·32	8·38	0 82	3·26	21·6
73225	9·05	0·24	8·81	1·47	1·60	2·6
73223	10·28	2·29	7·99	1·42	2·12	22·2
73224	9·81	2·00	7·81	1·94	2·42	20·3
4969	9·49	2 44	7·05	0·77	1·90	25·7
69444	10·84	2·43	8·41	0 98	1·42	22·4
71592	10·77	2·67	8·10	2·35	2·72	24·7
4960	9·81	2·23	7·58	2·86	3·26	22·7
69442	5·55	2·04	3·51	2·27	0·58	36·7
71838	9·33	1·94	7·39	2·15	1·26	20·7
71574	7·59	1·49	6·10	0·65	1·06	19·6
71594	8·48	1·91	6·57	2 12	3·22	22·5
56745	8 61	1·89	6 72	1·80	2·12	21 9
56744	7·97	1·89	6·08	2·20	1·88	23·7
4978	7·80	2·01	5·79	1·82	2·19	25·7
56742	10·86	3·31	7·55	1·80	3·49	30·4

†Sold as mustard cream. *Sold as salad dressing.

Examination of the above shows that manufacturers differ among themselves as to composition of a satisfactory prepared mustard. No harmful ingredients have been found in any of these samples; and I have no doubt that, as in the case of condimentary sauces, some preparations appeal to one section of the public, and some to another. An article which finds no favour with the public, will cease to be manufactured. Within the limits above named the public must judge for itself among the many varieties of Prepared Mustard offered.

Except by insisting that preparations advertised as containing mustard shall actually contain this article I do not see that any regulations or restrictions governing the matter can be justified.

BULLETIN No. 362—GASOLINE.

OTTAWA, January 23, 1917.

SIR,—The matter of inspection of gasoline has been repeatedly brought before the Department in recent years. I would specially refer to your Files of the following numbers:—

January 8, 1914	L. 112657 of F. 105594
April 27, 1914	L. 116577 of F. 106155
October 23, 1915	L. 135806
November 16, 1915	L. 136753
April 17, 1916	L. 143678
May 15, 1916	L. 145057 of F. 110804

In reply to L 135806 I furnished you with a memorandum dated October 28, 1915, in which I supplied general information upon the subject of gasoline that may be quoted here as an introduction to the matter of this report.

Gasoline.—I have examined, so far as possible, the history of this term, and of the article signified by it, since the year 1880, when I find it used by *Arthur Burgman* in his work on "*Petroleum und Erdwachs.*" He gives the density as from 0·6667 to 0·6829, and does not quote any limits for boiling points.

Prof. Hans Hofer (1888) in "Das Erdol" quotes density from 0·640 to 0·667, and B.P. from 70° to 80°C (=158° to 176° Fah.)

Dr. Alex. Veith (1892) in "Das Erdol," gives the terms gasoline, canadol and petroleum benzine for a product of density 0·660 to 0·680, and B.P. from 50° to 70° C. (=122° to 158° Fah.)

Dr. W. Scheithauer, (1895), in "Fabrikattion der Mineralole," quotes naphtha from Shale as of density 0·700 to 0·715, and calls it raw gasoline; from this, a gasoline of density 0·640 to 0·660 is obtained by rectification.

The above are German sources of information. Further, and fairly complete details as regards petroleum generally, are obtained from Redwood's comprehensive work "Petroleum," 2 vols., 1906; and from Tinkler and Challenger's "Chemistry of Petroleum," 1915.

From the first named it appears that the fractions of crude oil (petroleum) which distil below the minimum temperature fixed for a product (Kerosene, coal oil, etc.) available for use in lamps having a wick, and very generally employed in domestic lighting, have been classed as gasoline, without any definite discrimination, for the most part.

In the early history of the refining of crude oil, these fractions had little commercial value, and were either rejected or used to furnish fuel for the stills. The minimum limit for safe burning oil is very different for different countries, and at different times. The so-called "flash test" is merely a simple way of ascertaining the boiling point of the lowest (most volatile) component of a mineral oil; and the test is made either *open* or *closed;* the latter method requiring the use of the Abel apparatus, or some similar one, the former being made in an open, saucer-shaped dish. It goes without saying that the closed test is to be preferred, wherever practicable. The so-called *fire-test* is sometimes applied, and aims at determination of the temperature at which the oil, once lighted in the open, continues to burn.

Redwood quotes the minimum limit for a great many European and American ports of entry, and it ranges variously from 70° Fah. to 110° Fah. For Canada it is 85° Fah.

Tinkler and Challenger quote the following trade names for fractions which older classifications recognize as *gasoline,* or did not accurately define at all.

Benzine.—A fraction having B.P. 70° to 120° C. (=158° to 248° Fah.) chiefly Heptane.

Benzoline.—The more volatile portion obtained on redistilling benzine; B.P. about 70° to 95° C (=158° to 203° Fah.)

Gasoline.—That fraction of B.P. 40° to 70° C. (104° to 158° Fah.) obtained in the refining of Pennsylvania oil. Consists largely of pentane and hexane.

Motor spirit.—The saturated aliphatic hydrocarbons of American oil; the polymethylenes from baku oil, or the saturated hydrocarbons derived from shale oil, as well as benzine (C_6H_6) and alcohol (C_2H_5OH) are employed in internal combustion engines. The boiling points are usually below 120° C. (= 240° Fah).

Naphtha.—The less volatile portion obtained on redistilling benzine. Boils from about 95° to 120° C. (=203° to 248° Fah.). The term is unfortunately very loosely applied, and is synonymous with mineral naphtha.

Petrol.—Same as light petroleum, or benzine.

Petroleum ether.—Same as gasolene or benzine.

Petroleum naphtha.—Loosely employed; often denotes the first fraction (B.P. up to 150° C. 302° Fah.) obtained on distillation of crude oil. Often applied to any low boiling petroleum product.

Petroleum spirit and light petroleum.—Benzine, benzoline and naphtha, all of which terms are more or less synonymous.

Rhigoline.—The most volatile liquid fraction obtained in the refining of crude petroleum. B. P. 18° C. (= 64·4° Fah.). Used as a local anaesthetic. Consists largely of pentane.

Shale naphtha.—Shale spirit; the lower boiling fractions obtained in the refining of crude shale oil. Sp. Grav. 0·70 to 0·76. Used as a motor spirit. Contains about 50 to 60 per cent of unsaturated hydrocarbons.

Sherwood oil.—Same as light petroleum and petroleum ether.

Solene.—Synonymous with gasoline and petroleum ether.

It is sufficiently obvious from the foregoing, that the term *gasoline,* and its equivalents, is employed with much vagueness. It is much to be desired that the term should be defined by legal enactment; since it has come into very general use, and without such definition, it is impossible to protect the public by any regulations which the government may desire to ordain for such purpose. The necessity of having such regulations, and enforcing them is apparent when we consider the great number of melancholy accidents involving life and property that are chronicled in the daily papers.

It will be noted that all of the above definitions refer to gasoline as a more or less volatile fraction of crude oil, obtained in the progressive distillation of the latter. This was true of gasoline as known in the early days of oil refining. It is not true to-day.

So long as the fraction in demand by the public, was that known as coal oil or kerosene, and designed for domestic use in lamps and stoves, the refiner found difficulty in obtaining a market for light-boiling fractions. These were chiefly used for making so-called "air gas", or for carburetting water-gas or were burned under the stills. When however, the use of internal combustion engines in motor-boats, motor-

cars, and for a multitude of other purposes, came about, the demand for these light-boiling fractions became very great, and today the refiner realizes that gasoline is the most profitable product.

This has resulted in the discovery that the heavier hydrocarbons can be broken down, by appropriate methods (cracking) and, in this way, a gasoline can be produced which is very different from the older article bearing that name. The term *saturated* hydrocarbon has appeared more than once in these definitions. Briefly, it means a hydrocarbon in which the ratio of Hydrogen to Carbon atoms in the molecule is represented by the expression CnH2n+2 where C stands for a carbon atom, and H for a hydrogen atom.

Crude petroleum is, generally speaking, a mixture of such hydrocarbons, in which n has values ranging from 4 to 35 or even higher. Crude oils differ very greatly in the proportions in which they contain these hydrocarbons, some having large percentages of the lower members of the series; others having very small proportions of the lower members. The boiling point (volatility) constantly increases as we ascend the series; and it may be interesting to quote the following:

Formula.	Name.	B.P. (Fah.)	Density.
C_4H_{10}	Butane	31·8°	0·600
C_5H_{12}	Pentane	79·3°	0.627
C_6H_{14}	Hexane	156·0°	0 658
C_7H_{16}	Heptane	209·1°	0·683
C_8H_{18}	Octane	257·9°	0·702
C_9H_{20}	Nonane	301·1°	0·718
$C_{10}H_{22}$	Decane	364·2°	0 730

Pentane and Hexane are the chief components of the older gasolines. The succeeding members of the series beginning with nonane are the chief components of well-refined coal oil (Kerosene) which is usually defined as that fraction of crude oil which boils between 150° and 300° C. (=302° to 572° Fah.) containing therefore, the hydrocarbons from nonane to hentria—contane C31H64 with B.P. 575.6 Fah.

Another series of hydrocarbons many of whose members are available for lighting, or for use as gasoline, has the general formula CnH2n. It will be noted that the molecule of this series (known as olefines, in contradistinction to the first series, which are called paraffins) has relatively less hydrogen; or stated otherwise, has relatively more carbon. Its members, for this reason, tend to burn with a sooty, or smoky flame, and are on this account, less desirable for use in internal combustion engines. The boiling points of some olefines may be noted, as below:=

Formula.	Name.	B.P. (Fah.)
C_5H_{10}	Amylene	102·2°
C_6H_{12}	Hexylene	154·4
C_7H_{14}	Heptylene	208·4
C_8H_{16}	Octylene	255·2
C_9H_{18}	Nonylene	307·4

If we assume that it is not desirable in a motor gasolene to have a higher boiling point than 200° F., and that in a coal oil for domestic use it is not desirable to have a lower boiling point than 300° F. we see that, of the paraffin series, Heptane (B.P. 209·1°) marks the limit for gasoline; while in the olefine series Heptylene marks this limit; also for domestic coal oil, nothing below Nonane can be permitted in the paraffin series, or below Nonylene in the olefine series.

It is possible, by the process known as "cracking" to change the higher members of the paraffin series into lower members, with simultaneous production of an olefine. Thus, the hydrocarbon $C_{12}H_{26}$ may be resolved into the paraffin C_6H_{14} and the olefine C_6H_{12}, both of which are available as components of gasoline, although the hydrocarbon Dodecane ($C_{12}H_{26}$) with a boiling point of 418·1° Fah. would not be thus available. This last is a normal component of coal oil. If the refiner can make a greater profit by converting dodecane into hexane and hexylene and selling is as gasoline, he will be tempted to "crack" the hydrocarbon, instead of selling it as coal-oil (kerosene).

Unfortunately, the operation of cracking does not always proceed, in practice, as the above assumptions would indicate. Under varying pressures and temperatures the hydrocarbon $C_{12}H_{26}$ may crack in any of the following ways:—

Paraffin.		Paraffin.		Olefine.
$C_{12}H_{26}$		C_6H_{14}	+	C_6H_{12}
or		C_5H_{12}	+	C_7H_{14}
or		C_4H_{10}	+	C_8H_{16}

Should the cracking result in the formation, even to a slight extent, of either C_5H_{12} (pentane, B.P. 79·3°) or C_4H_{10} (butane) (B.P. 31·8°), it will be seen that very volatile substances are produced, and these, even when small percentages only are present, render the total product exceedingly dangerous in transport or in storage or in use. The safety of the public demands that these extremely dangerous components of gasoline, as manufactured by the cracking process, should be removed from the final product before this is permitted to be placed on the market. This might be done by blowing air through it, until volatilization of the dangerous components of gasoline, as manufactured by the cracking process, should be removed from the final product before this is permitted to be placed on the market. Of course this would entail shrinkage of volume, and an apparent loss to the producer; and for these reasons, is not done; or is done very imperfectly. It is for this reason that such large losses in transportation occur as are quoted by Mr. Henderson, who asserts that a tank car may lose from 100 gallons to 300 gallons in a ten day's journey.

A modification of the "cracking" process has recently been patented, and is, I believe, being worked somewhere in New Jersey. This depends upon the catalytic action of aluminium chloride, and may prove a rival of the older processes, although that has yet to be demonstrated.

SUGGESTIONS.

I do not think that the specific gravity of a sample of gasoline gives any information of value, concerning its safety. This is much better ascertained by determining the volatility of the article; which, as regards the less volatile grades, might be ascertained by a flash test, employing a specially designed apparatus.

A still better way might be to determine the loss of volume produced by causing a current of air of known temperature and volume to bubble through a column, of definite length, of the liquid to be tested. In order to the intelligent application of this test, and interpretation of its results, considerable investigatory work would be necessary.

Should you desire such investigation to be made in these laboratories, I shall be pleased to undertake the work, on receiving your instructions.

The above quoted memorandum presents, in a general way, the main features of gasoline production; but by no means covers the subject completely. Particularly should be mentioned the fact that the cracking process results in the formation of varying amounts of hydrocarbon products other than paraffins and olefines. These may include various members of the benzene series (aromatic hydrocarbons); and considerable amounts of benzene, toluene and xylene may be obtained from certain crude oils, by variously modifying the conditions of the cracking process.

It may also be noted that so-called casing-head gasoline is obtained from certain varieties of natural gas by compression and condensation, or by washing the gas with heavy oils and subsequent separation of the gasoline by distillation. Naturally this variety of gasoline is extremely volatile, and is employed for blending purposes.

Anyone interested in the further study of this aspect of the matter is referred to Bulletin No. 114 of the Bureau of Mines, Washington, D.C.

In March 1914 I addressed a circular letter to several of the larger users of motor gasoline, including the railway companies, in order to ascertain whether or not they purchased to specification. Replies indicate that usually no specification is submitted with call for tenders; and that, in cases where requirements are defined, the specific gravity of the article is the only consideration.

I have already stated my opinion that specific gravity alone, furnishes very imperfect information regarding a sample of gasoline. This is apparent when we consider that most, if not all, of the gasolines on the market, are mixtures of fractional distillates of widely varying density; and it is an easy thing for the producer to make choice of such components as shall produce a complex of any desired specific gravity.

It is usual to express the density of gasoline in degrees Baume: a method which should be obsolete. To convert degrees Baume, for liquids lighter than water, the following formula may be used.

$$\text{Spec. Grav.} = \frac{\text{Modulus}}{(\text{Modulus} - 10) + \text{degrees B.}}$$

The modulus generally employed is 140; but is not constant. The U.S.A. Bureau of Standards has approved 140.

In order to ascertain whether or not the brand name under which the article is sold, means uniformity of character, I tabulate below the results of analysis of 21 samples purchased by our inspectors as Premier; 9 samples purchased as White Rose; 6 samples purchased as Peerless, and 3 samples as British Motor.

In each series, the samples are arranged in order of the content of unsaturated hydrocarbons (olefines, etc.) as determined by contraction on treatment with fuming sulphuric acid.

PREMIER Brand

arranged in order of olefine content

Serial No.	Collector's No.	Spec. Grav. 15·5°	Fractionation.					Iodine No.	Polymerization olefine.	Volatile below 120°.	Volatile above 140°.	Loss.
			Below 70° C.	70° to 120°.	120° to 140°.	140° to 150°.	Above 150°.					
1	69538	0·721	11·0	70·0	11·0	2·5	4·5	8·5	2·2	81·0	7·0	1·0
2	69536	0·720	11·5	71·2	10·0	2·8	4·5	8·6	2·7	82 7	7·3	0·0
3	69531	0 720	12·5	70·2	10·5	1·8	4·0	8·7	2·8	82·7	5·8	1·0
4	69537	0·721	12·0	67·5	12·0	3·5	4·5	8·1	2 9	79·5	8·0	0·5
5	69539	0·720	11·0	71·7	10·8	2·0	4·0	8·8	3·4	82·7	6·0	0·5
6	69534	0·719	11·5	72·0	10·0	2·0	3·4	....	3·5	83·5	5·4	1·1
7	69532	0·720	13·5	69·2	10·8	2·0	4·0	8·5	3·6	82 7	6·0	0·5
8	69540	0·721	9·5	73·0	11·5	0·0	5·0	9·0	3·7	82·5	5·0	1·0
9	68247	0·739	7·0	64·6	15·2	5·2	7·0	9·1	3·8	71·6	12·2	1·0
10	52508	0·744	6·0	58·5	17·5	7·0	10·6	12·2	4·7	64·5	17·6	0·4
11	52509	0·741	6·5	58·0	18·0	6·7	10·3	12·8	5·8	64·5	17·0	0·5
12	65007	0·743	3·5	49·5	18·0	7·5	21.2	28·2	6·9	53·0	28 7	0 3
13	B.	0·736	3·5	54·0	20·0	7·5	14·6	32·9	8·0	57·5	22·1	0·4
14	G.	0·738	3·7	51·3	20·8	7·4	15·5	32·4	8·4	55·0	22·9	1·3
15	I.	0·741	3·0	50·8	22·7	7·8	15·0	30·5	8·5	53·8	22·8	0·7
16	71602	0·732	6·5	54·0	20·3	6·7	11·2	35·0	8 8	60·5	17·9	1·3
17	A.	0 740	4·5	51·2	20·7	7·6	15·8	31·7	8 9	55·7	23·4	0·2
18	75458	0·732	10·5	46·0	20·0	7·0	16·0	33·4	9·3	56·5	23·0	0·5
19	75436	0·734	6·0	52·8	17·7	8·0	15·0	37·9	9 6	58·8	23·0	0·5
20	C.	0·733	6·5	52·0	20·0	7·5	13 0	38·6	10·2	58·5	20·5	1·0
21	65032	0·735	7·0	49·5	18·5	7·1	17·0	44·0	11·3	56·5	24 1	0·9

White Rose Brand.

1	75437	0·744	5·0	66·5	14·5	5·5	8·5	1·9	1·7	71·5	14·0	−0·0
2	68248	0·743	6·0	57·5	18·0	7·4	10.2	4·3	2·4	63·5	17·6	−0·9
3	R.	0·729	2·5	72·0	14·0	4 7	5·9	.....	2·6	74·5	10·6	−0·9
4	Q.	0·729	3·0	67·0	17·0	4·9	7·5	12·4	2·8	70·0	12·4	−0·6
5	71603	0 736	12·0	48·0	13·5	8·1	17·5	3·3	3·0	60 0	25·6	−0·9
6	69535	0·746	1·0	42·0	26·7	10·3	20·0	.....	3·6	43·0	30 3	−0·0
7	69533	0·743	2·0	45 5	22·0	9·5	20·0	....	4·0	47·5	29·5	−1·0
8	52505	0·734	9·5	47·5	19·5	8·3	14·0	25·5	7·9	57·0	22·3	−1·2
9	H.	0·741	5·5	52·0	20·0	7·3	13·6	30·9	8·4	57·5	20 9	−2·1

Peerless Brand.

1	65006	0·730	3·5	59·5	15·5	6·5	13·5	4·8	1·5	63·0	20·0	−1·5
2	E.	0·720	10·5	67·0	9·7	3·3	6·7	1·3	2·0	77·5	10·0	−2·8
3	75461	0·737	3·5	54 0	20·0	9·3	13·2	7·7	2·1	57·5	22·5	−0·0
4	O.	0·732	12.8	18·2	16·5	12·0	36·8	.....	3·8	31·0	48·8	−3·7
5	F.	0·730	12·7	44·9	15·2	6·2	20·0	3·2	3 9	57·6	26·2	−1·0
6	65034	0·729	4·0	57·0	18·5	7·1	13·4	4·3	4·3	61·0	20·5	−0·0

British Motor Brand.

1	M.	0·720	11 5	58·0	13·5	6·5	10·5	.....	3·1	69·5	17·0	−0·0
2	N.	0·732	6·5	49·0	19·0	8·5	17·0	.....	3·5	55·5	25·5	−0·0
3	75459	0·735	5·5	47 0	21·5	8·5	16·7	20·8	5·6	52·5	25·2	−0 8

Premier Brand.—A user who had found satisfactory the first seven samples, which fairly resemble each other, would assuredly be disappointed with number 12 and succeeding samples, except perhaps number 18, which may contain enough of the component volatile at 70° to gaseify the heavy hydrocarbons, volatile only above 140°.

It will be noted that the specific gravity gives no certain indication of the composition of the article. While in a general way, a gravity not exceeding 0.720 indicates a large percentage boiling below 120° C. (in samples 1 to 8, about 80 per cent), the higher gravities, from 0·730 to 0·740, correspond to very irregular composition of the mixture. Thus, numbers 9·11 and A, which possess nearly the same gravity, contain respectively 71·6; 64·5 and 55.7 per cent boiling below 120° C.; 12.2; 17·0 and 23·4 per cent above 140° C.; of which 7·0; 10·3 and 15.8 is only volatile above 150° C.

White Rose Brand.—Much the same thing is indicated here. The fraction volatile below 70° C. varies from 1 to 12 per cent of the mixture; while the portion volatile above 150° C. runs from 5·9 to 20 per cent.

Peerless Brand.—Similar differences in character are found here. The portion volatile below 70° C. varies from 3·5 to 12·8 per cent, while that volatile above 150° C. varies from 6·7 to 36·8 per cent. It is certain that an adjustment of feed which would give satisfactory working with No. 2, would fail to give results with No. 4.

British Motor Brand.—This shows considerable differences between the samples; although the small number reported makes detailed comparison impossible.

Internal combustion engines, using gasoline, are employed under extremely varying conditions. For motor cars, where frequent stopping and starting is the rule, it is evident that a readily volatile gasoline is required; and particularly is this necessary in cold weather. Quite other conditions obtain in the case of stationery engines, working under cover. From these, and other considerations, it appears reasonable to expect that gasoline should be sold under a guarantee of specific character; and both manufacturer and consumer should understand the importance of recognizing well defined grades of the article. I learn (Metallurgical and Chemical Engineering, 1916, 557) that the Bureau of Mines, Washington has prepared tentative specifications in regard to gasoline, having special reference to the grading of this fuel. It is suggested that three classes be named, and defined according to the maximum temperature limit below which 90 to 95 per cent volume will distil. The specific gravity test is to be discarded as of no real value with mixed gasolenes. Other specifications require that the gasoline should not contain excessive percentages of unsaturated or aromatic hydrocarbons, nor too high a percentage of very volatile products, which cause danger and loss by evaporation; nor should any considerable amounts of heavy or non-volatile constituents be present.

The post office authorities of Chicago, as reported in the Chicago American (Oct. 1916) have fixed the following standards for gasoline for their use:

1. The boiling point must not be higher than 60° C.
2. Fifty per cent must distil below 135° C.
3. Ninety-five per cent below 177° C.
4. One hundred per cent below 191° C.
5. Not less than 95 per cent must be recovered by distillation: *i.e.* loss on distilling must not exceed 5 per cent.
6. Five cubic centimetres must evaporate from white paper without leaving a stain.

Holde (Translation by Mueller, 1915, p. 51) quotes the following specifications for Automobile Gasoline:—

1. Must be obtained by fractional distillation.
2. Must not leave a spot on white paper.
3. Running through a sieve should not separate into fine drops.

4. Of uniform composition, and, not a mixture of high and low boiling products.
5. Light naphtha should distil 80 per cent. under 100°C, and completely under 130°C.
6. Heavy naphtha, 50 per cent. under 100°C, and all under 140°C.
7. For passenger service the specific gravity should be from 0.70 to 0·72 at 15°C; for trucks, from 0·72 to 0·75.

It will, of course, be evident that authoritative classification of the 88 samples herein reported is impossible. This report will however serve the purpose of acquainting the public with the character of gasoline as found on Canadian markets.

TABLE I.

LIGHT GASOLINE

At least 10 per cent. distils below 70°C. Less than 10 per cent. residue above 150°C. Samples are arranged in order of the distillate below 70°C.

Serial No.	Collector's No.	Where Obtained.	Spec. Grav. 15°C.	Fractionation.					Iodine No.	Polymerization by Sulphuric Acid.	Loss.
				Below 70°.	70° to 120°.	120° to 140°.	140° to 150°.	Above 150°.			
1	75438	Hamilton	·700	28·5	54 0	8·2	0·0	9·0	2·4	2·4	0·3
2	69532	St. John, N.B.	·720	13·5	69·2	10·8	2·0	4·0	8·5	3·6	0·5
3	69531	" N.B.	·720	12·5	70·2	10·5	1·8	4·0	8·7	2·8	1·0
4	69537	Fairville, N.B.	·721	12·0	67·5	12·0	3·5	4·5	8·1	2·9	0 5
5	69534	St. John, N.B.	·719	11·5	72·0	10·0	2·0	3·4	.....	3·5	1·1
6	69536	Gold Brook	·720	11·5	71·2	10·0	2·8	4·5	8·6	2·7	0·0
7	69538	St. John, N.B.	·721	11·0	70·0	11·0	2·5	4·5	8·5	2·2	1·0
8	69539	" N.B.	·720	11·0	71·7	10 8	2·0	4·0	8·8	3·4	0·5
9	E	Ottawa	·720	10·5	67·0	9·7	3·3	6·7	1·3	2·0	2·8
10	55670	Vancouver, B.C.	.....	10·1	64·9	12·5	5·1	6·0	0·5	1·6	1·4

Gasoline of this type will probably give no trouble to the user as far as starting the engine is concerned. It may be found dangerous in storage on account of its ready volatility, and it may show considerable loss in transport. It contains little, if any, of the cracked product.

Table II.

Gasoline containing large fractions volatile only above 150°C, but having more than 10 per cent. volatile below 70°C.. Samples are arranged in order of the residue above 150°C.

Serial No.	Collector's No.	Where Obtained.	Spec. Gravity 15°C.	Fractionation.					Iodine No.	Polymerization by Sulphuric Acid.	Loss.	Percentage Volatile Below 140°C.
				Below 70°.	70° to 120°.	120° to 140°.	140° to 150°.	Above 150°.				
1	75462	Toronto	·738	12·5	18·1	13·2	7·7	48·0	9·2	3·4	0·5	43·8
2	O	Ottawa	·732	12·8	18·2	16·5	12·0	36·8	.....	3·8	3·7	47·5
3	75463	Toronto	·730	14·5	38 5	15·0	6·2	24·5	26·9	8·0	1·3	68·0
4	75432	Owen Sound	·720	17·5	40·0	13·0	6·1	22·5	.....	3·7	2·9	70·5
5	F	Trenton, Ont	·730	12 7	44·9	15·2	6·2	20·0	3·2	3·9	1·0	72·8
6	52507	Calgary	·732	15·0	40·0	15·5	8·0	19·0	4·2	2·0	2·5	70·5
7	71603	Indian Head, Sask	·736	12 0	48·0	13·0	8·1	17·5	3·3	3·0	1·4	73·0
8	75458	Toronto	·732	10·5	46·0	20·0	7·0	16·0	33·4	9·3	0·5	76·5
9	52504	Calgary	·730	10·5	53·0	17·4	3·6	15·5	2·8	1·4	0·0	81·9
10	52501	"	·731	12·0	50·0	17·5	6·5	13·5	2·4	2·8	0·5	79·5
11	71616	Wolseley, Sask	·724	15·0	55·5	10·3	4·7	12·9	4·2	2·0	1·6	80·8
12	M	Ottawa	·720	11·5	53·0	13·5	6 5	10·5	....	3·1	0·0	83·0

The whole of the gasolines of this series, but more particularly the earlier numbers, will give trouble in motor engines; the percentage volatile above 150° is great, and the amount of very light hydrocarbon is not great enough to assure complete volatilization of the high boiling fraction. Numbers 3 and 8 contain notable amounts of cracked gasoline. The high boiling residue is practically in inverse ratio to the total volatile below 140°C. It will be noted that numbers 1 and 2 are quite exceptional in this regard.

It is probable that samples giving Iodine numbers of 8 or higher contain cracked gasoline; and if the number is higher than 10 the indication is practically certain. (Technical paper 163, Bureau of Mines, Washington.)

TABLE III.

GASOLINES in which both the most volatile fraction (below 70°C.) and the least volatile fraction above 150°C.) are below 10 per cent arranged in order of total volatility below 140°C.

Serial No.	Collector's Number.	Where Obtained.	Spec. Gravity 15°C.	Fractionation.					Iodine Number.	Polymerization by Sulphuric Acid.	Loss.	Percentage Volatile Below 140°C.
				Below 70°.	70° to 120°.	120° to 140°.	140° to 150°.	Above 150°.				
1	69540	St. John, N.B	·721	9·5	73·0	11·5	0·0	5·0	9·0	3·7	1·0	94·0
2	63859	Sydney, N.S	·724	9·5	71·0	11·0	4·3	4·0	6·9	3·4	0 2	91·5
3	5456	St. Gabriel, Brandcn	·728	7·0	69·5	12 5	4 0	5·9	7·8	2·2	1·1	89 0
4	5433	St. Jean Matha	·726	8 5	69·5	10·8	5·0	5·0	8·9	2·6	1·2	88·8
5	R	Hamilton	·729	2·5	72·0	14·0	4·7	5·9	.....	2·6	0 9	88·5
6	55669	Vancouver	·742	8·8	66·7	13·0	4·5	6·5	0·6	3·9	0 5	88·5
7	55676	South Vancouver	·744	9 5	66·0	12·0	5·0	6·8	.....	2·8	0·7	87·5
8	55678	Vancouver	·743	8·9	66·1	12·5	5·0	6·0	0·6	1·8	1·5	87·5
9	Q	Hamilton	·729	3·0	67·0	17·0	4·9	7·5	2·8	2·0	0·6	87 0
10	68247	Nelson, B.C	·739	7·0	64·6	15·2	5·2	7·0	9·1	3·8	1·0	86·8
11	52503	Calgary	·732	9·5	63·0	14·0	4·5	8·5	9·8	4·5	0·5	86·5
12	52502	"	·732	9·0	64·7	12·8	5·0	8·5	9·5	2·9	0·0	86·5
13	5444	St. Gabriel, Brandon	·727	8·0	62 5	16·0	4·6	8·4	14·7	4·0	1 0	86·0
14	75437	Hamilton	·744	5 0	66 5	14·5	5·5	8·5	1·9	1·7	0·0	86·0
15	D		·724	5·0	63·5	17·0	5·5	8·0	.....	2·8	1·0	85 5
16	55680	New Westminster	·742	5·5	62·0	18·0	5 7	8·5	15·2	4 1	0·3	85·5
17	55672	Vancouver	·741	5·0	63·5	17·0	5·5	8·5	8·3	3·8	0·5	85·5
18	5432	St. Felix de Valois	·729	6·8	66·1	11·7	6·4	8·8	14·5	4·4	0 2	84·6
19	71617	Wolseley, Sask	·735	3·7	61·8	18·5	5·8	8·5	30·6	7·4	1·7	84 0
20	55679	New Westminster	743	5·5	61·5	16·8	6·2	9 0	14·6	5·0	1·0	83·8
21	55675	Vancouver	·743	5·5	60·0	17·5	6·5	8·5	9·6	4·0	2·0	83 0

Gasolines of the type represented in this table, should be found satisfactory. They do not contain enough of the very volatile component to make them abnormally dangerous in storage; nor is the high-boiling residue excessive. Cracked gasoline if present in a few of them is in small amount.

TABLE IV.

FORTY-FIVE samples Gasoline not included in the preceding Tables; and having more than 10 per cent residue over 150°C., arranged in order of this residue.

Serial Number.	Collector's Number.	Where Obtained.	Spec. Gravity 15°C.	Fractionation.					Iodine Number.	Polymerization by Sulphuric Acid	Loss.	Percentage Volatile Below 140°.
				Below 70°.	70° to 120°.	120° to 140°.	140° to 150°.	Above 150°.				
1	75445	Niagara Falls	·746	5·0	46 0	17·8	7·7	23·0	38·5	10·4	0·5	68·8
2	65007	Exeter, Ont.	·743	3·5	49·5	18·0	7·5	21·2	28·2	6·9	0·3	71·0
3	69533	St. John, N.B.	·743	2 0	45·5	22·0	9·5	20·0	. .	4·0	1·0	69·5
4	69535	"	·746	1 0	42·0	26·7	10 3	20·0	. .	3·6	0·0	69·7
5	75466	Toronto	740	5·5	45·5	20·5	8·0	20·0	12·8	4·3	0·5	71·5
6	L	Ottawa	·738	5·0	47·2	19·3	8·0	19·7	36 1	8·8	0 8	71·5
7	63860	Sydney, N.S	·743	2·0	45·5	24·0	10·0	18·5	4·6	2·5	0·0	71·5
8	P	Ottawa	·737	6·7	51·8	15·0	7·4	17·5	47 4	11·5	1·6	73·5
9	75460	Toronto	·736	6·0	46·5	21·3	8·9	17·0	15·2	4·4	0·3	73 8
10	65032	London, Ont	·735	7·0	49·5	18·5	7 1	17·0	44·0	11·3	0·9	75·0
11	N	Ottawa	·732	6·5	49 0	19 0	8·5	17·0	. .	3·5	1·0	73·5
12	75459	Toronto	·735	5·5	47 0	21·5	8·5	16·7	20·8	5·6	0·8	74·0
13	A	Hamilton	·740	4·5	51·2	20 7	7 6	15·8	31·7	8·9	0·2	76·4
14	G	Kingston	·738	3·7	51·3	20·8	7·4	15·5	32·4	8·4	1·3	75 8
15	65037	London, Ont	·729	4·0	59·0	15·5	6·0	15·0	4·2	4·8	0·5	78·5
16	75433	Wiarton, Ont	·743	1·5	49 3	24 9	9·2	15·0	. . .	3·6	0·1	75·7
17	75435	Brantford	·733	8·5	50·0	19·0	7·0	15·0	51·5	12·2	0 5	77·5
18	75436	"	734	6·0	52 8	17·7	8·0	15·0	37·9	9 6	0·5	76 5
19	I	Kingston	·741	3 0	50 8	22·7	7·8	15 0	30·5	8·5	0·7	76·5
20	J	"	·739	3 8	51 9	19·8	9·0	15·0	32·7	8·0	0·5	75·5
21	B	Port Hope	·736	3·5	54 0	20·0	7·5	14·6	32·9	8·0	0·4	77·5
22	52505	Calgary	·734	9·5	47·5	19 5	8·3	14 0	25·5	7·9	1·2	76·5
23	H	Hamilton	·741	5·5	52·0	20·0	7·3	13·6	30·9	8·4	1·6	77·5
24	K	"	·737	4·5	52·5	21·5	7·3	13·5	28·4	9·6	0·7	78·5
25	6500	Exeter, Ont.	·730	3·5	59·5	15·5	6·5	13·5	4·8	1·5	1·5	78·5
26	65038	London	.....	5·0	57·0	15 0	7·5	13·5	..	.....	2·0	77·0
27	65034	"	·729	4·0	57·0	18·5	7·1	13·4	4 3	4·3	0·0	79·5
28	75461	Toronto	·737	3·5	54·0	20·0	9·3	13·2	7·7	2·1	0·0	77·5
29	C	Ottawa	·733	6·5	52·0	20·0	7·5	13·0	38·6	10 2	1·0	78·5
30	5441	Joliette	·734	4 5	53·0	20·5	8·0	12·5	30·9	8 2	1·5	78·0
31	75464	Toronto	·731	7·0	52·5	20·5	7·0	12·5	41·7	10·5	0·5	80·0
32	75465	"	·729	5·0	55·7	19·3	8 0	12·0	4·8	3·9	0 0	80·0
33	5447	Joliette	·734	4·5	54·0	21·0	8·0	12·0	31 5	8·5	0·5	79·5
34	71610	Grenfell	·733	4·5	56·5	19·0	7·2	11·5	35·2	9·5	1·3	80·0
35	5426	Joliette	·735	4·0	55·0	20·5	7·5	11·3	30·9	8·2	1·2	80·0
36	71602	Indian Head	·732	6·5	51·0	20·3	6·7	11·2	35·0	8·8	1·3	80·8
37	55677	So. Vancouver	·745	8·0	56·5	17·5	6 6	11·0	3·3	4·0	0·4	82·0
38	5425	Joliette	·737	4·5	55·5	20·7	6 8	11·0	33·9	9·4	1·5	80·7
39	55668	Vancouver	·745	6·0	57·5	18·3	7·3	10·8	....	4·4	0·1	81·8
40	52508	Calgary	·744	6·0	58·5	17·5	7·0	10·6	12·2	4·7	0·4	82·0
41	52506	"	·739	6·0	62 0	15·0	6·5	10·5	11·6	3 0	0·0	83·0
42	52509	"	·741	6 5	58 0	18·0	6·7	10·3	12·8	5·8	0 5	82·5
43	68248	Nelson, B.C.	·743	6·0	57·5	18·0	7·4	10·2	4 3	2·4	0·9	81 5
44	52511	Calgary	·743	5·0	58·5	19 0	6 5	10·2	16·1	5·2	0·8	82·5
45	75431	Owen Sound	·730	7·0	55·0	23·0	4·5	10 0	29·7	8·0	0 5	85·0

With a few exceptions at the extremes of this table, the gasolines which it includes, show notable uniformity so far as the percentage distilling below 140°C. is concerned; and this in spite of the fact that the amount of cracked gasoline in them is extremely variable. This is indicated by the large iodine number and the contraction on polymerization, which, in a general way, approximates one fourth of the iodine number. While it is apparent that most of these samples contain more or less cracked gasoline, those designated P, 65032, 75435, C, and 75464, contain very large amounts. The mixing has, however, been done with judgment; and a machine adjusted so as to

work well with almost any one of these samples would probably work satisfactorily with any other.

It would seem useless to object to the presence of cracked gasolines, since the demand for gasoline is so great, that, straight distillates from the crude, would entirely fail to meet it, and the cracking of heavier hydrocarbons is imperative.

The main features of the present report may be summarized as follows:—

1. The term gasoline has, at the present time, a quite different signification from that which it originally possessed.
2. When the most important application of petroleums was in domestic lighting, it was necessary to legislate to protect the consumer of coal oil. The reverse is the case to-day, and the user of gasoline requires protection.
3. Gasoline should not contain too volatile constituents, which make it dangerous in use, and entail loss in transportation.
4. Neither should it contain too great a percentage of difficulty volatile fractions, which seriously affect its use in motor engines.
5. Since most modern gasolines are mixtures, the specific gravity of the article affords no satisfactory indication of its character.
6. Various types of gasoline should be recognized and defined; since internal combustion engines are employed under widely varying conditions.
7. The brand name under which gasoline is sold in Canada is no guarantee of uniformity of character.
8. Cracked gasoline and Casing head gasoline, are not necessarily objectionable as components of mixed gasoline; but the mixed article should be made to conform to definite and well understood specification, and should be sold in such a way as to inform the buyer as to its character.
9. Gasoline should always be purchased to specification.

I believe that the report now in your hands will be useful in assisting the Department to regulate the sale of gasoline; and that it will afford users of the article, information which will be helpful to them; and enable them better to understand why ground for complaint is so widely apparent.

BULLETIN No. 363.—MALT EXTRACT FOR BAKERS' USE.

OTTAWA, 9th February, 1917.

SIR,—I had the honour, in February of last year, to report to you upon a collection of so-called Malt Extracts (152 samples) since published as Bulletin No. 326.

This term was found to include many different types of food material, varying from the pharmacopoeal article, to extracts which differed little, if at all, from ordinary beer.

Since publication of the report named, many inquiries have been made regarding the Malt Extracts which are now largely employed by bakers, and which were not specially represented in my last report.

The article in question is generally understood to be a concentrated preparation of the soluble matters of barley malt, so treated as not to destroy the activity of the diastase, whose presence and amount constitutes, probably, the most valuable feature of the extract from the baker's standpoint.

The diastatic value of Malt, and Malt Extract is usually expressed in degrees Lintner; and I have used this form of stating it, as being most intelligible to ordinary

readers. A malt preparation is said to have a value of 100 degrees Lintner, when one-tenth cubic centimeter of a 5 per cent solution converts enough starch to completely reduce 5cc of a standard Fehling's Solution, certain definite conditions of time and temperature being observed.

The Malt Extract of the British pharmacopoeia, as reported in Bulletin No. 326, was found to possess Lintner values somewhat above 100 degrees in the best samples, average samples giving values from 50 to 60 degrees.

Malt.—According to Ebertz and Schule (Lunge, Technical Methods, Vol. 111, 698) the diastatic power of English brewing malt is usually between 20° to 40° Lintner, while that of green malt may be as high as 100° to 125°.

Five of the samples purchased by our inspectors, are found to be, not malt extracts, as called for by their instructions, but ground malt, or malt flour. These five samples possess diastatic values ranging from 54·4 degrees Lintner to 64·5 degrees. (*See* samples 74813, 74814, 74815, 74818 and 75029.)

Malt Extract.

Baker (Allen's Commercial Organic Analysis, 4th Edn., Vol. 1, 145) quotes six samples of commercial extracts as giving Lintner values from 25·6 degrees, to 46·5 degrees; the mean value being 33·6 degrees.

Parry (Food and Drugs, 1911, page 166) quotes six samples of Malt Extracts, as varying from 14° Lintner to 38°; and mentions the last as being "one of the best known brands, and of the best quality." The mean value for these six samples is 26·7 degrees Lintner.

Eighteen samples herein reported vary from 12·2 degrees Lintner to 50·0 degrees, the average value being 30·0 degrees.

The content in reducing sugars, which represent complete hydrolysis of starchy matter, is also a condition of value. These substances not only give sweetness to the bread, but also assist in retaining the natural moisture of the loaf. According to Parry (loc. cit.) the reducing sugars, stated as maltose, in nine samples, varied from 48 per cent to 62 per cent, the average amount being 56·7 per cent.

Eighteen samples reported herein give reducing sugars (as maltose) from 60 to 75 per cent, averaging 67·9 per cent.

The ash of malt and malt extracts, represents the mineral constituents of the article; and this mineral matter possesses a value as yeast food.

There is no evidence in the accompanying analytical results, to show that additions have been made to the extracts for the purpose of increasing such yeast food. The ash normal to malt extracts, varies from about 1·4 to about 1·7 as a percentage on the extract. The ash found only exceeds these limits by being less in amount than the minimum quoted.

This is the first occasion upon which we have examined the special extract which forms the subject of this report; and I am not aware of any standards for the article having authoritative endorsement. If it should be considered desirable to fix such standards, a much fuller, and more extended investigation should be undertaken.

BULLETIN No. 364.—MALT VINEGAR.

OTTAWA, February 13, 1917.

SIR,—I beg to hand you a report concerning 185 samples of Vinegar, the great majority of which were sold as Malt Vinegars.

The report consists of two parts. The first part (twenty-two samples) represents a special collection made in Vancouver and Victoria, in February, March and April of last year. This collection was made consequent upon specific complaint (see L-138566) to the effect that vinegar was being offered in British Columbia, as Malt Vinegar, which was in reality not Malt Vinegar, but a fraudulent imitation of the article. An examination of this report proves conclusively that the complaint was well founded, only 11 of the 22 samples being genuine.

Further investigation, however, showed that in several instances, the apparent fraud was due to incorrect reading of our standards for Vinegar, as published in G. 1096, dated December 29, 1913. The standards referred to provide for the sale of Blended Vinegar, which is defined as a mixture of two or more varieties of Vinegar. Most of the samples found to be illegal, were labelled in a manner to indicate that they were blended; but while the amount of Malt Vinegar in the blend was very small, the words Malt Vinegar were most conspicuous on the label, with the result of deceiving the purchaser into the belief that he was buying a genuine Malt Vinegar or at least an article which contained a large proportion of Malt Vinegar.

Since a comprehensive inspection of the article was proposed for June, July and August of 1916, it was considered reasonable to permit the offence, as above described, to be passed over with a formal warning.

The remainder of this report deals with 163 samples purchased in June, July and August of last year. Inspectors were carefully instructed to purchase Malt Vinegar only; and in most instances this instruction was observed. In the case of Mr. Inspector Audet, five samples (5353, 5356, 5359, 5361 and 5364) are invoiced simply as Vinegars. None of these samples are Malt Vinegars, and if sold as such, are adulterated under the Act. Mr. Inspector Audet has since explained (see his letter of March 1, 1917), that he demanded malt vinegar in every instance.

The subjoined synopsis gives the general results of this examination.

COLLECTION OF FEBRUARY, MARCH AND APRIL, 1916.

Found genuine Malt Vinegars	11 samples.
Found not to be Malt Vinegars, but sold under names which implied Malt Vinegar either entirely or as a blend	11 "
	22 "

COLLECTION OF JUNE TO AUGUST, 1916.

Found genuine Malt Vinegars	97 samples.
" adulterated under the Act	31 "
" slightly below standard and passed	35 "

Standards for Vinegar have been legalized since December 19, 1913; and Circular G. 1096 embodying these standards was published on December 29, 1913. Bulletin No. 313, which contains a detailed report of two hundred and forty-five samples of Vinegar, was published in May, 1915. I mention these facts to justify the conclusion that vendors of the article have been fully warned in the matter, and cannot

reasonably urge any excuse for selling as Malt Vinegar an article which does not comply with legal requirements.

The characteristic constants of Malt Vinegar comprise a minimum content of solids (1·80 per cent) and a minimum content of mineral solids, or ash (0·20 per cent). Phosphates are characteristic of the ash of Malt Vinegar; and it will be found on examination of this report, that the amount of phosphoric acid is seldom less than about 40 to 50 milligrammes per 100cc. of Vinegar. In many cases it reaches a much higher number. Spirit Vinegar, on the other hand, contains but little ash, and the phosphoric acid content is trifling, or nil.

A considerable number of samples yield results which prove conclusively that malt has been employed in their manufacture. This industry is a new one in Canada, and it is fair to assume that failure to produce a perfectly satisfactory malt vinegar is rather due to inexperience than to any desire to put out a surrogate article. Being convinced of the essential truth of this assumption, I have ventured to pass all samples which give evidence of having been made from malt, even although such samples fail to reach the standard of a normal malt vinegar; and I would respectfully ask you to justify my interpretation, for this occasion. Of course it must be understood that such concession can form no precedent for future decisions; and that it is granted in recognition of the fact that honest efforts are being made by Canadian manufacturers to produce a malt vinegar which shall fully meet legal requirements.

When Acetic Acid is employed in the manufacture or fortification of a Vinegar, traces of formic acid are almost invariably found in a distillate from such Vinegar. Mr. Rowat, of this staff, has done a considerable amount of research work, at my request, for the purpose of establishing the following points:—

1. Do genuine Malt Vinegars yield a distillate which could be mistaken to contain formic acid?

2. If a genuine Malt Vinegar, not responding to the test for formic acid, be fortified by addition of commercial, refined acetic acid, will it then give the formic acid reaction?

3. If it does so, is the intensity of the reaction proportional to the amount of acetic acid added?

Mr. Rowat's work clearly shows that genuine Malt Vinegars give no reaction for formic acid when treated by the method of Woodman and Burwell (Allen, Com. Org. Analysis, 4th Edn. Vol. 1, page 521); that addition of commercial acetic acid, containing traces of formic acid, is readily detected; and that the depth of colour with fuchsin, is approximately proportional to the amount of acetic acid added.

BULLETIN No. 365—CARAMELS.

OTTAWA, March 12, 1917.

SIR,—In Bulletin No. 346 (published in July of last year) I drew attention to the alleged extensive employment of paraffin as a stiffener in the form of candy sold as Chocolates. Seven samples of the 151 samples therein reported were found to contain paraffin; but the amount was not determined.

Concerning paraffin as a component of a food product I made the following statement:—

"The National Confectioners' Association of the United States, issued a Food Law Circular under date May 20, 1913, containing a list of substances prohibited in confectionery, among which appears paraffin.

The food laws of Illinois, Nebraska and Utah, specifically forbid the use of paraffin in candy; and those of many other States are interpreted in such a way as to condemn its use.

It is certain that so-called paraffin or paraffin wax is wholly without food value; is quite indigestible, and is not a normal component of any natural food material. Its melting point (about 54·5°C. = 130·1° Fah.)is so high as to keep it solid at the body temperature, and being quite insoluble in the digestive fluids, it is conceivable that serious results might ensue from its presence in foods consequent upon mechanical disturbances."

Several correspondents have claimed that, while paraffin is occasionally employed by manufacturers of the cheaper grades of so-called Chocolates, it is much more largely used in that form of confection known as Caramels.

It was considered desirable to ascertain the facts of the case, and in consequence a collection of caramels was ordered in October and November of last year.

This report, dealing with 110 samples may be summarized as follows:—

Caramels containing no paraffin	30	samples.
" " traces only	8	"
" " less than 0·5 per cent	8	"
" " more than 0·5 per cent but less than 1·0 per cent	13	"
" " more than 1 per cent	51	"
Total	110	

Of 51 samples which contain above 1 per cent by weight of paraffin, the subjoined table gives particulars:—

From 1 to 2 per cent paraffin	23	samples.
" 2 " 3 " "	12	"
" 3 " 4 " "	10	"
" 4 " 5 " "	5	"
" 5 " 6 " "	0	"
" 6 " 7 " "	1	"
Total	51	

We have no direct legislation against the use of paraffin in candy. Whether or not the amounts above indicated can be regarded as harmful to health is a matter for very careful consideration, and will be duly investigated.

Since writing the above I have received the following expression of opinion from Dr. A. D. Blackader, Professor of Pharmacology at McGill College, Montreal, and Medical Adviser to this Department.

"It is a subject to which my attention had never been previously drawn, and I have taken time to consult my confrères and made enquiries from all whom I thought might give me an opinion. The answer I received from most of my confrères was to the effect that in amount so small as 1 per cent it was not likely to do any harm, one might even say 2 per cent, but that in larger amounts there was a possible risk in persons or children who consumed large amounts of candy.

In his very recent volume on Pharmacology (1916) Sollman states that pure paraffin is harmless, ill-refined paraffin may give rise to toxic symptoms. Any impurity in the paraffin used for caramels may do harm in several ways. Care therefore must be taken that only pure paraffin is employed. If the paraffin is pure, and in amount does not exceed 1 per cent I do not think its employment can do harm. The only objections to it is that it is of no use as a food, and in candy may be regarded as an adulteration."

BULLETIN No. 366—CANNED PEAS.

Ottawa, March 16, 1917.

Sir,—I beg to hand you a report upon 210 samples of canned peas. All of these samples prove to be of good quality so far as the vegetable matter is concerned.

The special object had in view in this collection was the ascertaining whether or not departmental regulations as regards the presence of copper in peas were being observed.

Our last systematic inspection of peas, was made in 1909, and is published as Bulletin No. 192. No regulations in the matter of copper colouring existed at that time; and it was particularly desired to ascertain whether or not the presence of such amounts of copper as experience has shown sufficient to give a desired colour to peas, was attended with danger to the health of the consumer.

I recommended that the subject should be referred to competent medical authorities; and as the result of such action, the following decision was reached, and is incorporated in an Order in Council of January 9, 1915, published as G. 1167.

"III. In all cases except such as are covered by sections I and II above, the presence of artificial colouring matter must be declared upon the label, in easily legible type.

IV. When used in the amounts necessary to produce desirable colours in foods, the following substances are regarded in the light of present knowledge of their physiological effects, as harmless to health, within the meaning of the Adulteration Act. Should more extended knowledge of the effects upon the health of any of the colouring matters named below establish their harmfulness, they would, in such case, come under section 3 (*f*) of the Adulteration Act; and their presence in foods would constitute adulteration:—

Copper salts, in the greening of peas, provided that the amount of copper (expressed as metallic copper) in the peas does not exceed 80 parts (by weight) per million in the drained peas or 10 parts per million in the imbedding liquid."

The inspection now reported shows that only 26 samples out of a total of 210 samples are coloured with copper. These are, as far as can be ascertained, all imported peas. It is satisfactory to know that the demand for coppered peas is not largely in evidence in Canada; and that the colouring of peas with copper is not known to Canadian industry.

The conditions under which copper is permitted as a colouring material in peas, require (1) That the copper in the peas shall not exceed 80 parts per million. (2) That the copper in the imbedding liquid shall not exceed 10 parts per million. (3) That declaration of the presence of copper shall be made on the label.

Our work shows that no noteworthy excess of copper in the peas themselves occurs in any of these samples.

Excess of copper in the imbedding liquid is found in five samples. The amount varies from 20 to 73 parts per million.

The presence of copper is declared in three samples. Twenty-three samples contain copper without mention of this fact on the label.

BULLETIN No. 367—EDIBLE GELATIN.

OTTAWA, 22nd March, 1917.

SIR,—I have the honour to report upon 137 samples of Gelatin, purchased by our inspectors in April, May and June of last year.

The report is arranged in three parts. Table 1 furnishes the ordinary analytical results upon 57 samples. Table II gives results in greater detail upon 52 samples, specially examined by Mr. M. Brot of this staff now at the front, somewhere in France. Table III gives results for sulphurous acid only, in 28 samples of so called Jelly Powders. These articles are not properly described as Gelatin, although they contain gelatin as an ingredient.

Both edible gelatin and glue are obtained by treating the collagens of bones, tendons, cartilage, etc. with boiling water. It will be readily understood that, fundamentally, they are the same thing. The essential character of edible gelatin, as distinguished from glue, is its purity. Glue may be a perfectly pure article without ceasing to be glue; but edible gelatin must be a pure article; and, in order to ensure a satisfactory degree of purity, it should be required to meet certain specified standards.

The treatment which the original material receives in the manufacture of gelatin is such as to fairly well assure the destruction of organic impurity. But when we consider the nature of the material available for the manufacture of glue, dead animals of all kinds, and in various stages of decomposition, we must recognize the desirability of giving the consumer of gelatin a guarantee that only selected and unobjectionable materials have been used in its production. This can only be done by efficient inspection at the factory; and for this reason, the inspection of all gelatin factories should be undertaken by Government. So far as Canada is concerned, this is the case; and the Department of Agriculture, in its administration of the Meat Inspection Act, guarantees the quality of the material used in manufacture of edible gelatin, so far as meat packers, doing an export business is concerned. I am not however aware that the manufacture of gelatin is anywhere in Canada carried on beyond the actual requirements of the manufacturer in his own business. Practically all of the gelatin used in Jelly Powder manufacture, in ice-cream, etc. is of foreign manufacture.

The Department of Customs has kindly furnished me with the following statistics concerning the importation of gelatin and isinglass (fish gelatin) for the fiscal year ending 31st March, 1916.

	Lbs.	Value.
United Kingdom	179,173	$43,327
China	41	8
France	13,112	2,507
Holland	2,231	460
Japan	10,280	3,570
Switzerland	13,862	2,684
United States	246,116	91,035
Total	464,815	$145,591

Gelatin is thus defined by the British Phramacopœia, revision of 1914; "Is the air-dried product obtained by the action of boiling water on animal tissues, such as skin, tendons, ligaments and bones.

Characters and Tests.—In almost colourless, translucent sheets or shreds. Insoluble in alcohol (90 per cent) and in ether: soluble in acetic acid. A solution in hot water (1 in 50) is inodorous, and solidifies to a jelly on cooling. An aqueous solution yields a precipitate with solution of tannic acid, but not with solutions of other acids, or with dilute solution of alum, solution of lead acetate, or test solution of ferric chloride. Ash not more than 2 per cent."

Gelatin finds extensive uses in the arts, and most of its applications require the article to possess a high degree of purity. The definition above quoted has primary regard to its employment in medicine, where it is used in the manufacture of capsules and otherwise. It is, however, with its use as a food material that we are immediately concerned.

As a food, gelatin enters into the manufacture of so-called jelly powders, in jellied meats, as a stiffener in ice cream, etc.

Investigatory work, having for its object the fixing of definite distinction between edible gelatin and glue, as used in the arts, has for a considerable time been carried on by the Department of Agriculture at Washington. I am not informed of the completion of the work referred to, but by correspondence I learn that the most important characters considered to establish the distinction are odour, turbidity, jelly strength, fat and ash.

Colour is of necessity, a matter of importance, although the bright colours given by coal-tar dyes to most jelly powders, reduce its importance so far as these are concerned. Where select materials are employed in the manufacture, it should not be necessary to use bleaching agents to give edible gelatin desirable lightness of colour. Our standards require that sulphur dioxide (sulphurous acid) shall not be present in solid foods above 1 part in 2,000 parts (50 parts per 100,000). This limit is exceeded in 11 samples of Table I and in 10 samples of Table II.

Traces only of sulphurous acid are found in the jelly powders enumerated in Table III.

Ash.—The British Pharmacopœia fixes 2 per cent, as the ash limit in gelatin. This limit is exceeded in 27 samples of Table I, and in 10 samples of Table II.

Odour.—This is observed by soaking in cold water for 4 hours and then making into a jelly by heating with water. Good samples yield no offensive odour. Thirteen samples of Table I and 14 samples of Table II gave more or less unpleasant odour when thus treated. Of this number 5 samples were decidedly objectionable, and should undoubtedly be classed as glue.

Turbidity of a 25 per cent, solution was observed in the samples arranged in Table II. Of the total number (52 samples) 15 samples gave more or less distinct turbidity; in 9 of them the turbidity was very marked.

Viscosity.—This may be determined by the method of flow, which however we have found to be very unsatisfactory and subject to large experimental error. Determinations as recorded in Table II were made on 25 per cent, solutions at 80° C. In a general way the results corroborated those ascertained by the use of the Doolittle Viscosimeter, but these last are much more trustworthy and duplicates in close agreement are easily obtained.

The instrument is standardized in terms of sugar solutions made as per instructions accompanying it.

We have not yet been able to formulate specific standards for gelatin, but it is hoped that this may be done in the near future, and the information furnished herewith will be helpful to this end.

BULLETIN No. 368—KETCHUP.

OTTAWA, 31st March, 1917.

SIR,—I beg to hand you a report upon 111 samples purchased as Ketchup (Catsup) by our inspectors in October and November of last year. With a single exception these represent Tomato Ketchup.

Four of these samples were found to be more or less fermented. Of this number, only one sample contained a preservative (benzoic acid) and this was present in mere trace. All the other samples were in good condition.

Fifty-five (55) samples contain a preservative; salicylic acid in two cases; in all the others, benzoic acid.

An Order in Council of 4th April, 1914 permits the use of benzoic acid to the amount of 1 part per 1,000 parts; and of salicylic acid, to the amount of 1 part in 5,000, under the following conditions:

"Provided that not more than one kind of preservative substance, named in this list, shall be added to any one kind of food, or to any mixture of two or more kinds of food; that the amount of preservative shall not exceed the maximum amount herein named, and that the presence of the preservative shall be declared on the label." (Circular G. 1111.)

Twenty-four (24) samples contain a dye (coal tar dye). This is permitted by Order in Council of 9th January, 1915, provided that only those dyes specially named in Circular G. 1167, may be used, and that the presence of the dye is declared upon the label, in clearly legible type.

No illegal dyes have been found in any of these samples; and preservatives are in all cases but three, within the legal limit. Benzoic acid is present to the amount of 1·8 parts per 1,000 in No. 76332; and to the amount of 1·3 parts per 1,000 in No. 73245. These quantities are probably harmless, in an article like Ketchup, which is employed as a condiment only. Sample No. 56835 contains salicylic acid to the amount of 2·6 parts per 1,000; and as the limit for salicylic acid is only 0·2 per 1,000, this represent a very large excess.

Many of these samples which contain either or both preservative and dye, make declaration of the fact upon the label. In 29 cases, however, there is failure to declare the presence of preservative or dye, or both, as required by the Orders in Council above cited. This, of course, constitutes a violation of th Act, and makes the vendor, or manufacturer liable of penalty.

In extenuation, it is claimed that many of these samples were on the market either before or very shortly after publication of our standards, and are, without any intention of violating the Act, labelled in the same way as was customary before standards regulating the use of preservatives and dyes were established. The standards in question are dated, April 1914 and January 1915 respectively. Purchase of these samples was made about the end of 1916, or about two years after legalization of standards.

There would appear, therefore, to be no validity in the claim made by manufacturers to be held exempt from penalty; but, since nothing that can be regarded as endangering public health can be urged against any of these articles, (with the single exception of No. 56835-. I would respectfully suggest that this report, so far as it affects the declaration of preservatives and dyes on the label, be regarded as a warning

to manufacturers of Ketchup that they will, in the future, be strictly held to the terms of our standards as published in G. 1111 and G. 1167.

It will further be noted that these samples vary greatly in the amount of solid material which they contain.

There can be no doubt that, as regards cost of manufacture and value to the consumer, they possess unequal values. A discussion of this phase of the matter will be found in the introduction to Bulletin No. 275 (February 1914) our last report on Ketchup.

I am not prepared however, to discuss this aspect of the question. Ketchup is a condiment, rather than a food proper, and it may be that the kind and quality of the material entering into its manufacture are of more importance than the quantity of such material. The consideration of this subject may be postponed for the present.

REPORT

OF THE

MINISTER OF AGRICULTURE

FOR THE

DOMINION OF CANADA

FOR THE YEAR ENDED MARCH 31

1917

PRINTED BY ORDER OF PARLIAMENT.

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1917

[No. 15—1918]

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REPORT

OF THE

MINISTER OF AGRICULTURE

1916-17.

To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc., Governor General and Commander in Chief of the Dominion of Canada.

May it Please Your Excellency:

I have the honour to submit to Your Excellency a report of the Department of Agriculture for the fiscal year ended March 31, 1917.

I. GENERAL REMARKS.

Under the respective headings of the branches and divisions of this department will be found a synopsis of proceedings during the past year. The work in each branch has been efficiently carried on.

There has been no legislation affecting the department during this period.

By an Order in Council of date the 28th day of August, 1916, the general regulations under "The Destructive Insect and Pest Act", approved under date the 4th November, 1914, and amendments thereto, were further amended by striking out regulation IV and substituting therefor the following:—

> IV. *An Inspector shall have power to enter* any lands, nursery, or other premises where there is reason to believe that any of the insects, pests or diseases hereinafter specified are or may be present, *or where there exists trees, shrubs, or other vegetation which prevents the successful control of the said insects, pests or diseases. An Inspector* shall give *such* instructions *as may be necessary* for the treatment or destruction of any tree, bush, crop or other vegetation or vegetable matter or the containers thereof, which may be found or suspected to be infected with, *or constitute an obstacle to the successful control of* any of the insects, pests or diseases hereinafter specified, and such instructions shall be carried out by the owner or lessee of the infected, suspected, *or*

menacing vegetation, vegetable matter or containers thereof and such remedial treatment shall be carried out and continued until the insect, pest or disease shall be deemed by the Inspector to have been exterminated *or the menace removed. The Inspector shall have power to carry out the required treatment or destruction if necessary.*

Vide Canada Gazette, vol. L, p. 723.

I have to report with regret the death, on the 23rd June, of Dr. C. C. James, C.M.G., Commissioner under the Agricultural Instruction Act. Devoted to agriculture, he was indefatigable in his service, and by his broad knowledge and tireless energy he contributed in an unusual degree to the betterment of the conditions of this great Canadian industry.

Mr. W. J. Black, B.S.A., late Secretary of the Economic and Development Commission, was appointed to succeed the late Dr. James, on the 19th July, 1916.

Canada participated in the Panama-California International Exposition held in San Diego, California, during 1916 and also up to the 31st of March last. The exhibit was considered one of the main features of the exposition, and attracted a great deal of attention.

As there are no big international exhibitions in sight, it has been decided to pack up the Canadian exhibits and ship them to Ottawa.

A report from the Canadian Exhibition Commissioner for the fiscal year ended March 31, 1917, will be found as an appendix hereto. (See appendix No. 2.)

II. ARTS AND AGRICULTURE.

DAIRY AND COLD STORAGE BRANCH.

The year under review was a very profitable one for the dairying industry of Canada. There was a large increase in the production of milk, and consequently in the output of butter, cheese, and condensed milk. A glance at the figures of our export trade in dairy produce will show a very gratifying increase in the quantity shipped abroad, and a much larger increase in value, due to the high prices that have prevailed.

In the fiscal year ended March 31, 1914, the quantity of butter exported was 1,228,753 pounds valued at $309,046, while during the past year the quantity exported was 7,990,453 pounds valued at $2,491,992.

In 1914 the quantity of cheese exported was 144,478,340 pounds valued at $18,868,785, whereas this year the quantity was 180,733,426 pounds valued at $36,721,136.

In 1914 the quantity of condensed milk exported was 9,339,382 pounds, worth $666,941. This year the quantity was 15,858,622 pounds, and the value, $1,371,610.

Taking the aggregate value of butter, cheese, condensed milk, fresh cream, and casein exported from Canada during the past year, it amounts to the fine total of $41,367,705, a sum which is $10,000,000 in excess of any previous year. If to this

we add the value of the milk, butter, and cheese consumed at home, a reasonable estimate of which would be $140,000,000, we arrive at a total production of $181,367,705.

The foregoing figures present in unmistakable form a convincing illustration of the argument that the best spur to increased production is found in high prices.

A DISASTER TO THE CHEESE INDUSTRY AVERTED.

In the beginning of the season of 1916 the very existence of the cheese industry was seriously threatened by a shortage of rennet, the agent which has been used from the earliest times to coagulate the milk as the first step in the process of manufacturing cheese. Rennet is prepared from calves' stomachs, the supply of which has been obtained during the last thirty years principally from Bavaria, Hungary, and Russia. Supplies from these countries being entirely cut off by the war, it was obvious that, unless a substitute could be found, the cheese factories would have to cease operations as soon as the stock on hand was exhausted, or until such time as farmers and butchers could be induced to save a sufficient number of the stomachs of calves slaughtered in this country. The efforts made to secure calves' stomachs in Canada were not very successful, and it soon became evident that something else must be depended on.

A SUBSTITUTE FOR RENNET.

It had been known for some years that a pharmacopœial preparation known as "pepsin," prepared from the stomachs of pigs, had coagulating properties similar to rennet, but it had never been used in the commercial manufacture of cheese.

Experiments were at once undertaken at the Finch Dairy Station, in which various chemicals and different preparations of pepsin were tried, and by careful tests it was demonstrated that pepsin could be safely employed as a substitute for rennet, and that cheese made in this way were equal in quality to those made with rennet. The matter was taken up with the manufacturing chemists, and the result was that in a few weeks, standard preparations, suitable for cheesemaking, were put on the market, which are now being used very extensively in the place of rennet.

UNSUITABLE PREPARATIONS OFFERED.

The prospects for a new business in supplying rennet substitutes attracted considerable attention, and several preparations were offered to the cheesemakers which were quite unsuitable for the purpose. Many chemicals will coagulate milk, but more is required than mere coagulation. There is a somewhat obscure fermentation or digestive process set up by rennet and pepsin which seems to control the ripening, or curing, of the cheese. The cheesemaker is not in a position to determine, without making a practical test, whether any alleged coagulant is suitable for the purpose or not, and as a large quantity of milk is handled daily in a cheese factory, and it is weeks before it can be determined whether the coagulant is serving the purpose or not, it is evident that the risk involved is very great.

The Dairy Commissioner advised the cheesemakers not to purchase any preparation which had not been thoroughly tried by some competent person who could recommend it. The results of the tests of inferior articles were published as soon as known. In this way the reputation of Canadian cheese was protected, and heavy losses averted. There was also the danger of uninformed persons attributing any defect in the quality of the cheese to the use of pepsin, and thus injuring the reputation of the Canadian product. Any alleged defects in cheese due to pepsin which were reported were followed up by the experts of the department, and in every case it was found that the defect was due to something else, or to the fact that the pepsin was not properly used. By thus proving the satisfactory character of pepsin, confidence was established in a very short time.

Pepsin Supplied by the Department at Cost.

As a precaution against an actual shortage, I authorized the Dairy Commissioner to purchase a quantity of pepsin to be sold to cheesemakers at cost in cases of failure on their part to secure supplies through the regular trade channels, or in the event of any attempt being made to unduly inflate the price of pepsin. The result is that cheesemakers can now secure pepsin in both liquid and powdered form at a price, which, although higher than the pre-war price of rennet extract, is only about one-third the present cost of standard rennet extract.

It was thought at first that there was a slightly larger loss of fat in the whey when pepsin only was used, but further investigations and experience in the use of pepsin show that quite as good results in this respect can be obtained with pepsin as with rennet. With this last objection removed, there is no reason why cheesemakers should pay high prices for rennet.

The Dairy Station at Finch, Ont.

The dairy station at Finch, Ont., was under operation by the department as a model cheese factory and creamery the entire year, as usual, the business increasing slightly over that of the previous year. The total quantity of milk received in 1916 was 2,486,380 pounds and the average value to the patrons was $1.60 per 100 pounds, compared with 2,418,010 pounds of milk received in 1915 and an average value of $1.35 per 100 pounds.

THE CREAMERY AT ST. HILAIRE, N.B.

The Madawaska creamery at St. Hilaire, N.B., was operated by the department during the summer months of 1916, and there was a considerable increase in the quantity of butter made in comparison with the previous season. Farmers in the district are well pleased with the results obtained, and a further increase is looked for in the quantity of milk furnished to this creamery during the coming season of 1917.

The average price paid to the patrons in 1916 was 35·55 cents per pound of butter fat. In 1915 the average price paid was 27·09 cents per pound.

COW TESTING.

During the season of 1916 the general plan of cow testing was continued as in former years:—

(*a*) Through "Cow Testing Associations," in which the testing of milk samples from individual cows was done entirely by managers of cheese factories and creameries, for which they were paid by the department at the rate of 5 cents per test. (Under this plan there were 572 herds with 4,457 cows tested in 1916.)

(*b*) Through "Dairy Record Centres," in which an officer of the department had direct charge of the milk testing.

The following table shows the steady growth of the work at the thirty-five dairy record centres in the last three years, without increasing the number of men employed:—

	Total Number of Herds.	Total Number of Cows Under Test.	Total Number of Records Received.
1914...	2,027	17,777	126,527
1915...	2,743	23,009	183,560
1916...	3,383	29,409	212,854

The above figures do not include the large number of individual farmers who are making tests privately as a result of the cow-testing propaganda, and who are supplied with forms withtout charge by the Dairy and Cold Storage Branch.

The steadily increasing number of applications for milk and food record forms, particularly the forms for daily weights of each milking, that continue to come from all corners of the Dominion, testify to the widespread desire for the information to be derived from cow testing. There are also a great many inquiries from farmers for information about milk-testing apparatus.

Statistics show that there has been an average increase in milk production of over 1,000 pounds per cow for the whole of Canada since this work was started. At present values, this increase represents about $40,000,000.

INSPECTION OF DAIRY PRODUCTS.

The inspection of dairy products has been carried on during the past year in the same manner and by the same staff as during the previous year. The methods of inspection are described in detail in Appendix IX of the Report of the Dairy and Cold Storage Commissioner for the fiscal year ending March 31, 1915.

ADULTERATION OF BUTTER.

Preliminary tests for water-content were made of 2,040 samples of creamery, dairy, and whey butter, of which 114 samples (5½ per cent of the number tested) contained more than the legal maximum of 16 per cent of water, and were therefore adulterated.

This does not mean, however, that 5½ per cent of all butter sold is adulterated, as usually only butter which appears to be high in water-content is sampled for testing. In most cases, when the water-content of butter is in excess of the legal maximum, it is evident that such excess is not due to any intent to defraud, but is rather due to ignorance of the principles controlling the incorporation of water in butter, or

to carelessness in the application of same. If circumstances indicate that there is no definite intent to defraud, the offender, for a first violation, is usually let off with a warning.

During the year, six prosecutions were made on account of excess water, a conviction being secured and a fine imposed in each case.

IMITATIONS OF BUTTER.

During the year two convictions have been secured for the sale of butter imitations, and a fine of $200, together with the costs of prosecution, was imposed in each case.

WEIGHTS OF PRINTS OR BLOCKS OF BUTTER.

The weights of prints or blocks of butter throughout the country continue to improve. During the past year, eighteen cases of short-weight prints have been prosecuted, and convictions secured. The fines imposed ranged from $10 to $50, with costs. The number of convictions on account of short-weight prints is fifteen more than during the previous year. This is due to a more vigorous policy in connection with this part of the work. Short weight is the greatest form of fraud in connection with the butter trade at the present time. With butter retailing at the present high price of about three cents per ounce, the question of short weight becomes very important.

BRANDING OF CREAMERY BUTTER.

During the past year two prosecutions have been taken, and convictions secured, on account of creamery butter being branded in such a manner as to give false information as to the creamery in which the butter was made.

REFRIGERATOR CAR SERVICES FOR BUTTER AND CHEESE.

The special refrigerator car service for butter was in operation from May 8 to October 7. About 1,300 cars were operated in this service, at a cost to the Department of about seven thousand dollars. By reason of a guarantee of earnings from my department, a regular refrigerator service was provided for the dairy sections of the country, and shippers were able to forward any quantity of butter, from one package upwards, without any expense other than the regular less-than-carload freight rate. During the period referred to, two inspectors were employed at Montreal, one at Toronto, and one at Halifax to report the condition of the butter cars on arrival, the temperature of the butter, quantity of ice remaining in the bunkers, etc. These reports were received daily at Ottawa, and anything of an adverse character was promptly transmitted to the railway company concerned.

From June 12 to September 9, about 1,300 carloads of cheese were moved by refrigerator cars to Montreal and Quebec for export, and on these shipments the department paid the icing charge of $5 per car. This was in accordance with the agreement between my department and the railway companies, which provides for a refrigerator car service for carload shipments of cheese between the dates mentioned.

CARGO INSPECTION.

Four cargo inspectors were employed at Montreal during the season of navigation, instead of six as in pre-war days, and one inspector at Halifax. In Great Britain the usual staff of four inspectors was maintained, covering the ports of London, Liverpool, Glasgow, and Bristol. Under existing conditions the class of labour employed in loading and unloading the ships was naturally not so expert as before the war, and the proportion of breakage was therefore considerably increased. The inspectors did the best they could to supervise the handling and to keep down the percentage of beakage to a minimum. Thermographs were placed in the regular liners, and temperature records were obtained for the information of the shippers. Full reports were also made on the condition of all perishable cargo loaded or discharged at any of the ports mentioned above.

THE GRIMSBY PRECOOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE.

During the season of 1916 the experimental cold storage warehouse at Grimsby, Ont., which is owned and managed by this department, under the direction of the Dairy and Cold Storage Commissioner, carried on experiments and demonstrations on:—

The proper maturity of fruit for long-distance shipment.
Best style of package.
Methods of loading cars.
The use of brine tank cars for fruit shipments.
The rate of precooling at different temperatures, and in different styles of packages.

Bulletins covering the experiments have been issued and are available for distribution.

During the season this warehouse handled 1,567,328 pounds of fruit for the local growers. This quantity is equivalent to about eighty carloads.

PUBLIC COLD STORAGE WAREHOUSES.

Under the provisions of the Cold Storage Act (chapter 6, 6-7 Edward VII) the sum of $26,053.21 was paid in the form of subsidies to public cold storage warehouses that had been erected in conformity with the above Act. No new contracts were entered into during the year, and the expenditure under this head is decreasing rapidly each year.

CREAMERY COLD STORAGE.

A bonus of $100 is paid to any creamery that builds a suitable cold-storage room according to plans and specifications furnished free by the department. During the year, forty-one applications for this bonus were received and thirty were approved and paid. In the case of the other eleven the conditions laid down by the department were not complied with. This bonus system was commenced in 1897, and since that time 977 creameries have taken advantage of it.

PUBLICATIONS.

During the year the following publications have been issued:—

Bulletin 49.—Small Cold Storages and Dairy Buildings.

Bulletin 50.—The Use of Brine Tank Refrigerator Cars for Fruit Shipment.

Bulletin 51.—The Rate of Precooling Fruit in Different Styles of Packages and at Different Temperatures.

Bulletin 52.—Methods of Handling Basket Fruits.

Circular 18.—The Use of Pepsin as Substitute or Partial Substitute for Rennet in the Manufacture of Cheese.

Circular 19.—Directions for Using Soluble Powdered Pepsin as a Substitute for Rennet.

Circular 20.—Cow Testing.

Circular 21.—Further Notes on the Use of Pepsin and Other Substitutes for Rennet in the Manufacture of Cheese.

THE SEED COMMISSIONER'S BRANCH.

The work of the Seed Commissioner's Branch during the past year has been under four main divisions—seed growing, seed testing, seed inspection, and seed supply. The question of seed supply has required more attention than usual.

The production and use of better seed is encouraged by subventions to the provinces for field-crop competitions, seed fairs and provincial seed exhibitions, and to growers of field root and vegetable seeds under certain conditions. A grant is also made to the Canadian Seed Growers' Association, which directs the production of registered and improved seeds grown from superior stocks.

Seeds are tested for purity and germination at the Ottawa and Calgary laboratories. Twenty-five samples are tested free of charge for any company or individual. For each additional test a charge of 25 cents is made. This work has increased greatly during the last few years.

The seed trade is regulated under the Seed Control Act. Inspectors are assigned to definite districts to visit seed dealers and growers, report the kinds and quantity of seeds offered for sale, and forward samples from inferior lots for official analysis. The Seed Control Act defines the quality of different grades of timothy, red clover, alsike, and alfalfa seeds. Special seed grades are also defined by Order in Council for Western Canada grain, and seed corn on the cob is sold under the voluntary control agreement. Those seeds for which grades are not defined must be labelled with the names of all noxious weed seeds which are present in excess of a stated proportion. All seeds not up to vitality standards for good seed of the kind must be sold under mark of actual percentage germination. Violations of the Act are punishable by fines.

Information is collected and compiled on seed supplies for farm and garden crops. Where a shortage occurs, special efforts are made to stimulate production and facilitate securing and distributing available supplies. Timothy seed growing is being encouraged in Alberta, and field root and vegetable seeds where conditions are favourable. This year seed grain in large quantities has been purchased and distributed at cost.

The following summary report gives in more detail the nature of the work carried on by this branch.

Seed Growing.

FIELD CROP COMPETITIONS AND SEED FAIRS.

These services are conducted by the provinces, with the assistance of Dominion subventions amounting to two-thirds of the moneys awarded in cash prizes, but not exceeding approximately one-half the total cost of conducting this educational work. The number of competitions held continues to increase. During the summer of 1916 there were 442 field-crop competitions conducted, on which subvention amounting to $25,785.57 was claimed, as follows:—

Prince Edward Island	$ 686 99
Nova Scotia	796 27
New Brunswick	781 00
Quebec	4,000 00
Ontario	13,013 33
Manitoba	46 65
Saskatchewan	2,612 31
Alberta	2,849 32
British Columbia	1,000 00

This number of competitions held shows an increase of twenty-five over the previous season. The total subvention claimed is about $60 less than in 1915. The falling-off was principally in Nova Scotia, Manitoba, and British Columbia. Substantial increases are shown by New Brunswick, Quebec, Saskatchewan, and Alberta.

In the winter and early spring of 1915-16 there were 177 local seed fairs on which subvention was paid amounting to $7,083.69, divided as follows:—

Prince Edward Island	$ 200 00
Nova Scotia	240 32
New Brunswick	300 00
Quebec	1,934 51
Ontario	113 53
Manitoba	1,225 10
Saskatchewan	1,767 00
Alberta	1,303 23

These returns show an increase of thirty-two in the total number of seed fairs held in comparison with the previous season, and an increase of nearly $1,000 in the subvention paid.

Provincial seed exhibitions were conducted during the winter of 1915-16, and subventions paid as follows:—

Prince Edward Island	$446 00
Nova Scotia	187 00
Maritime Provinces Winter	595 00
Fair, Amherst, N.S.	.....
New Brunswick	419 00
Quebec	450 00
Ontario, Guelph	550 67
Ottawa	582 67
Manitoba	600 00
Saskatchewan	300 67
Alberta	400 00
Total	$4,531 01

The returns for the seed fairs and provincial seed exhibitions conducted during the present year are not completed.

FIELD ROOT AND VEGETABLE SEEDS.

The production of field-root and garden vegetable seeds has been further encouraged during the past year. For the supervision of this work the employment of special officers became necessary. Supplies of these seeds from Europe have been materially reduced and have advanced in values. Seedsmen, accordingly, have offered contracts and stock seed to Canadian growers for 1917 and 1918 production at quite remunerative prices. My officers in direct charge of this work have been able to arrange for the production of a substantial part of our requirements of these seeds by assisting seedsmen in placing orders for their supplies with experienced growers in the provinces of British Columbia and Ontario. The acreage of swede turnip and the hardier vegetable seeds is also being extended in Quebec and the Maritime Provinces. It is anticipated that by thus placing the industry on a sound business basis, profitable to both the grower and the trade, greatly increased production will result.

The quantity of homegrown seeds produced in 1916 remained practically as in 1915. The seed on which subvention was paid amounted to over 27,400 pounds, the subvention being approximately $1,200. The kinds and amounts produced were: sugar beet, 20,325 pounds; mangel, 2,283; swede, 1,948; parsnip, 1,209; onion, 1,066; garden beet, 250; and smaller quantities of table carrot, cabbage, tomato, and radish. A large number of farmers and gardeners also grew sufficient seed for their own use.

REGISTERED AND IMPROVED SEED.

Financial support to the work of the Canadian Seed Growers' Association has been continued. This association is now receiving $7,000 per year from the Seed Commissioner's Branch appropriation. Valuable work is being done by members of this association in the production of superior strains of seed, particularly cereals. Under the direction of the association, individual growers or farming clubs are provided with select seed, usually developed by an Experimental Farm, which is grown under rules to maintain its purity. The product of this select stock seed is catalogued each year by the association as registered or improved seed, according to its standing, and constitutes a valuable source of supply for high class seed.

SEED TESTING.

Under this general division of the work is included the testing of seeds for farmers and merchants, identification of samples, and general educational and investigation work in connection with the cleaning and handling of seeds. Many samples of seed are also tested in connection with the seed inspection system.

SEED TESTED FOR FARMERS AND MERCHANTS.

Severe injury to the principal grain crops from different causes throughout Western and much of Eastern Canada last fall resulted in a great increase in the volume of work demanded of the seed laboratories at Ottawa and Calgary. The Calgary laboratory has been enlarged and improved, and has been able to render an immense

service to the grain growers of Western Canada by giving them exact information in regard to the purity and vitality of grain which they were contemplating using as seed.

From September 1, 1916, to March 31, 1917, 11,870 samples of grain and other seeds were received and tested at Calgary, as compared with 6,882 for the same period last year. In reporting on samples sent by farmers, the results of the germination tests have been accompanied by remarks as to the impurities and recommendations for improving the seed by cleaning.

At the Ottawa laboratory, 9,763 samples were received from September 1 to March 31. The larger proportion of these were received from wholesale and retail merchants, and represent lots of timothy, red clover, alsike and alfalfa intended for sale throughout the trade under grades as required by the Seed Control Act.

An unusually large number of red clover seed samples were received from Ontario farmers, due no doubt to the excellent conditions for seed production obtaining the previous fall. The seed was of an unusually high quality, but too much of the Ontario seed is polluted with the seeds of ribgrass, ragweed, night-flowering catchfly, foxtail and other weeds whose seeds are of such a size that they are difficult or impossible of separation by sieves in ordinary cleaning machinery. Accompanying the ordinary purity reports issued to farmers on red clover samples, letters and circulars have been sent giving information in respect to cleaning and handling the seed.

EDUCATIONAL WORK.

The influence of the seed laboratory in spreading information in regard to the value and meaning of seed testing has been enlarged through the work of district representatives of the provincial Departments of Agriculture and others who conduct short courses in agriculture for farmers and farmers' sons. These courses usually include work on seed testing, seed judging, weed-seed identification and related subjects. The seed laboratory has supplied those responsible for the conduct of these classes with weed seeds, grain, screens and suggested outlines of work that might be taken up in connection therewith. Similar assistance has also been given to those taking up agriculture subjects in collegiate institutes, high schools and continuation classes.

A good deal of attention has also been given to the question of cleaning grain and other seeds by means of the ordinary fanning mill. One of the chief reasons why such poor results are accomplished by fanning mills is that many of the sieves that were originally supplied have been lost or worn out. An improvement in this connection is expected, as the co-operation of the manufacturers of fanning mills has been enlisted and they are now prepared to supply sieving to cover old frames to fit the farmers' mills.

Our efforts towards bringing about more careful and thorough cleaning of western grain at threshing time are being continued, and we have evidence that improvement has been made in many sections. Considerable interest has been aroused among the grain growers and live-stock men, and reports of successful experiments in cleaning grain at threshing time have been received. The manufacturers of threshing machines have been acquainted with the problem and at least one firm has set about per-

fecting an appliance for attachment to the threshing machine to separate the screenings. Live stock and other associations have been given information in regard to the feeding and handling of screenings. It is of interest to note that the screenings accumulating at the Canadian Government elevators are being utilized as recommended in the department's bulletin on "Grain Screenings."

It has been found necessary to limit somewhat the distribution of our reference collections of one hundred kinds of weed and economic seeds.

The identification of seeds of weeds and other plants has received careful attention, necessitating much correspondence.

The laboratories are co-operating with the Association of Official Seed Analysts of North America in its efforts to improve the methods of germination and purity analysis. Mr. E. D. Eddy, Chief Seed Inspector, was president of the association last season and attended the annual meeting in St. Paul in July: Mr. J. R. Dymond, Acting Chief Seed Anylyst, has been referee on purity analysis for the association for two years, and attended an executive meeting of the Association held in New York in December, 1916, in affiliation with the American Association for the Advancement of Science.

SEED INSPECTION.

Inspection under the Seed Control Act has been continued along the usual lines. Owing to the light crop of clover seed in Ontario in the fall of 1915, a larger proportion than usual of the seed on the market the next spring was imported. Most of this seed was of excellent quality in respect to purity, and was properly graded when offered for sale. The 1916 crop of clover seed was much better than that of the previous season, and a larger proportion of the seed being sold this spring is Canadian grown. Some of the finest clover seed, both red and alsike, on the market this year was produced in New Ontario.

As has been the case for a number of years, very little clover and timothy seed is being put on the market by large dealers that is not in conformity with the Seed Control Act requirements. Most of the violations are on the part of farmers or local dealers in the seed-producing districts who do not have their seed thoroughly cleaned, tested, and properly graded. One of the principle difficulties with which local dealers and farmers have to contend is that a great deal of the seed when threshed is badly contaminated with weed seeds, and cannot be properly prepared for market except by the use of power cleaners, which are now operated only by the large dealers.

In the spring of 1916 the seed being offered for sale was inspected in 2,203 places, a decrease of sixty-five compared with the previous season. The larger places were visited by the inspectors several times. For this work temporary seed inspectors are employed to assist the regular district officers of the Seed Branch. Apart from vegetable seeds, 615 violations of the Act were detected in the spring of 1916, a decrease of about fifty compared with the previous year. Of these, 205 were for not having timothy, red clover, alsike, or alfalfa marked with the grade number; forty-eight were for having these seeds wrongly graded; and 175 for offering seeds which were below the standard for No. 3. There were 144 violations for exposing cereals and other seeds for which grades are not provided, without being labelled to indicate the presence

of noxious weed seeds, and forty-three for seeds being below the germination requirements. Most of the violations were for first offences or of a minor character, and it was considered necessary to institute legal proceedings against only thirteen dealers. One of the seedsmen whose samples were collected in connection with the paper-packet seed investigation was included in this number.

PAPER PACKET SEEDS.

The paper packet seed investigation commenced in the spring of 1915 has been continued and some valuable results secured. The work of the second year has confirmed the results during the first season, in that it shows a great difference respecting the vitality and quantity of seed supplied in paper packets by various dealers. For the purpose of the investigation, sample packets of twenty standard varieties of vegetable seeds put up by ten of the largest dealers were collected by seed inspectors. The difference in the vitality of seeds supplied by various dealers is shown by the range in the proportion of their samples germinating below two-thirds of the standard for good seed which was from 8 to 53 per cent. The quantity of vital seed supplied also varied greatly with the different dealers, and in some cases with different packets put out by the same firm. Results so far indicate that certain dealers are supplying seed very low in vitality and also decidedly inferior in respect to uniformity and type character. The investigation is being continued, with more attention being given to type and the quality of the crop produced.

SEED CORN CONTROL.

The Seed Corn Control agreement which was inaugurated in the spring of 1916 has been renewed with some slight modifications. Under this agreement, producers of Canadian-grown corn undertake to sell seed corn on the cob only under certain regulations, which require that the corn shall be properly named as to variety and marked grade No 1 or No. 2 according to defined standards. All corn sold under the agreement is subject to sampling by seed inspectors or the purchaser, and if it is found to be wrongly graded certain penalties are attached. An alphabetical list of the growers offering seed corn under the agreement renewed were received from ensilage growers, who consider it a valuable protection against being supplied with inferior seed, and also from the seed-corn growers.

Owing to the extremely unfavourable weather conditions which prevailed during the season of 1916, the amount of corn produced in Canada which was suitable for seed was very limited, probably not more than 10 per cent of the normal supply. The small quantity available was exhausted early in the season, and most of the growers who would otherwise be offering seed this spring under the control system of marketing now have none for sale. These conditions have greatly reduced the number of growers under the agreement and the amount of seed offered this season.

The Seed Supply.

SEED GRAIN GRADES.

The special grades for seed grain inspected at the Canadian Government elevators, referred to in last year's report, was revised in October on my recommendation to the

Governor in Council. Standards were defined for No. 1 Canada Western seed oats, No. 1 Northern and No. 2 seed wheat, and No. 3 Canada Western seed barley. These grades are based on the commercial grade standards with further requirements in respect to purity, dockage, and vitality. For the seed grades, Red Fife and Marquis wheat are kept separate. All grain on which ex-elevator seed certificates are issued must be cleaned to the dockage set by the seed inspectors and be free from noxious weed seeds within the meaning of the Seed Control Act. The application of these special seed grades is effected through the co-operation of my colleague, the Honourable the Minister of Trade and Commerce, whose officers are responsible for handling the grain in the elevators, apart from the inspection for the seed grades. The inspection of the seed when it enters the elevators, and when cleaned for shipment, is done by my staff of seed inspectors.

SEED PURCHASING COMMISSION.

Owing to the extremely unfavourable weather conditions prevailing in parts of Canada last season, the grain crop was greatly reduced in yield and the quality much impaired. Early in the fall it became evident that prompt action was desirable, on the part of the Government, in order to preserve the best part of the western crop and make it available for seed this spring.

With this in view the Governor in Council, on my recommendation, appointed a special seed-purchasing commission with authority to purchase, and store in the Canadian Government elevators, grain that was suitable for seed. This grain was to be cleaned to the seed-grade standards, under the inspection of Seed Branch officers, and delivered, on order of the chief commissioner, at a price sufficient to cover the average cost of the grain plus charges for cleaning, sacks, loading ex-elevator, and other necessary expenses. The cost of the commission, including salaries, is being met from the Seed Branch appropriation. For the personnel of the commission, appointments were made from the most experienced inspectors of the Seed Branch staff. Mr. A. E. Wilson, Indian Head, Sask., is chief commissioner and purchasing agent.

The duties of the Seed Purchasing Commission included negotiations with provincial and municipal governing bodies in the three prairie provinces with a view to securing their co-operation in the matter of providing seed to grain growers who were really in need of financial support. The provinces of Manitoba and Saskatchewan promptly adopted suitable legislation authorizing their municipal governing bodies to extend credit to those farmers who were in need. With these arrangements completed, and in view of the fact that shortage of seed supply in the province of Alberta was confined to a few relatively small localities which were taken care of by local interests, apart from special legislation, the seed purchasing commission were able throughout to maintain a basis for selling seed grain subject to payment by bank draft on arrival of the seed.

The Seed Purchasing Commission, acting for Western Canada, and the Canadian Government Elevators Seed Department, with officers at 226 Grain Exchange, Winnipeg, acting as selling agent for the commission for Eastern Canada, were able to fill all orders for seed grain from municipal governing bodies, farmers' organizations, farmers, and also wholesale and retail seed merchants in all parts of Canada, that were received, with grain of superior quality that was clean and suitable for seeding.

The sum of $400,000 was first made available for the purchase of seed wheat, according to the terms of the Order in Council (P.C. 2314) October 7, 1916. A further sum of $800,000 was provided by Order in Council (P.C. 3073) December 14, for the purchase of seed oats and barley as well as wheat. On March 23 a final appropriation of $500,000 was made by Order in Council, (P.C. 830), making a total of $1,700,000 made available for the purchase of seed grain. The money was placed at the credit of the Seed Purchasing Commission at the Bank of Montreal, Regina, Sask., in installments of $100,000 as required. The total amount issued to the credit of the commission at Regina was $1,400,000. All seed sold by the commission was for cash, and all proceeds from sales of seed grain were deposited to the credit of the Receiver General. It is expected that all the money advanced to the commission for purchases will be returned from sales before the end of June, with the probability of a small surplus.

Up to March 31 the commission had purchased 629,383 bushels of wheat, 392,815 bushels of oats, and 1,566 bushels of barley. The average cost of the wheat at the elevators was approximately $1.84 per bushel, No. 1 Northern basis; and the oats, approximately 59 cents per bushel. In the cost price is included the premium over the commercial grade price paid for seed grain and the inward freight to the elevators.

The quantity sold and delivered by the commission up to April 7 amounted to 398,063 bushels of cleaned seed wheat, at an average price of approximately $1.98 per bushel, No. 1 Northern basis, and 7,480 bushels of oats at an average price of approximately 69½ cents per bushel. These prices include freight paid to point of shipment, and sacks and sacking for a part of the grain. These oat sales do not include the sale made through the Winnipeg office of the Canadian Government Elevators where orders were accepted from Eastern Canada for No. 1 Canada Western cleaned seed oats which were sold at 80 cents per bushel, freight paid to Fort William.

WESTERN CANADA TIMOTHY SEED.

For several years officers of this branch have devoted considerable attention to the production of timothy seed in Western Canada, particularly certain districts in Alberta. It has been found that the seed produced in the Prairie Provinces is usually of excellent quality. In 1912 a propaganda was instituted to stimulate timothy seed production in the principal live-stock districts of Alberta. By 1915 the industry had developed sufficiently to supply the needs of the province, and nine car loads of Alberta timothy seed were shipped to points outside the province.

An inquiry last August indicated a large increase in the timothy seed harvest with considerable anxiety on the part of farmers as to facilities for assembling and cleaning the seed for market. The matter was submitted by the Seed Commissioner to the Board of Grain Commissioners, resulting in an arrangement becoming effective September 1 for handling the seed at the Canadian Government terminal elevator at Calgary, on the general basis that is applied to flax seed and cereal grains. Announcement was made to growers and dealers that timothy seed would be received at the Calgary elevator, cleaned, graded, warehouse receipt issued for the net weight of recleaned seed, stored for fifteen days, and finally sacked and loaded on the cars

ex-elevator at a total charge of 5 cents per hundredweight. It was recognized that this was merely a nominal charge, as the process of cleaning timothy seed is much slower than with flax seed or cereal grains.

During the past season, 1,337,460 pounds of timothy seed were received at the Calgary elevator. Of this amount about 86 per cent was graded No. 2 under the Seed Control Act standards, 12½ per cent No. 3, and only 1½ per cent was below the No. 3 standard. The Alberta seed has found a ready market.

THE LIVE STOCK BRANCH.

I took the opportunity last year of pointing out, through my report, the very great importance of live-stock production as an increasing commercial asset to the country and, at the same time, called attention to the advantages of stimulating and developing our export trade in establishing a permanent and lucrative market for our surplus live-stock products. During the year which has just closed, the significant truth of the statements then made has been more clearly and impressively emphasized through the growing urgency of the food problem which has confronted the United Kingdom and her allies. Throughout the twelve months, prices of eggs, poultry, bacon, and beef have risen to an unprecedented level, a fact which serves to indicate very faithfully the well-recognized world shortage of meats and meat products. That the farmers of Canada are contributing a substantial quota to the Empire's need in this regard is made clear by a consideration of the amounts of our exports of such staple commodities as are included in the following statement. Comparison with the exports of previous years indicates the remarkable resources of the country in the ability to respond to a market demand which has been called into being in such a limited interval of time.

EXPORTS.

	Fiscal Year.				
	1913.	1914.	1915.	1916.	1917.
	$	$	$	$	$
Eggs	58,176	92,322	1,206,518	2,705,416	1,810,380
Poultry	279 276	211,763	551,078	440,319	388,035
Bacon	5,351,225	3,763,330	11,812,186	25,759,266	43,011,439
Beef	160,877	1,165,295	2,060,430	6,154,632	5,750,435
Ham	322,669	270,049	2,654,064	1,382,734	766,595
Pork	79,687	216,810	2,610,776	2,054,316	2,522,926
Wool	314,588	803,522	2,786,665	1,506,579	2,595,488
Totals	6,566,498	6,523,091	23,681,717	40,003,262	56,845,298

NOTE.—The figures for 1913-14-15-16 include importations re-exported. For 1917, the figures are for domestic exports only.

I am glad to be able to say that the services of the Live Stock Branch have been utilized to the very fullest possible extent in developing the movement and in strengthening the position of the country in this direction. Under the circumstances, I feel

that there is ample justification for the increasing appropriations which Parliament has been asked to provide for this work. The activities which have been undertaken during the past year have undoubtedly aided greatly in extending production, in increasing the facilities in marketing, and in developing a strong, confident attitude throughout the country which, even under the difficulties presented through shortage of labour and high prices for feed, has stimulated an extension of effort and of enterprise in all the provinces of the Dominion. I am particularly glad to be able to comment upon the willingness of such powerful institutions as the banks, the railways, and the distributors to co-operate with the department in what has been undertaken. The need for the commercial expansion of our live-stock industry upon a sound business basis is being widely recognized, and I am satisfied that even more significant developments are yet to be expected.

Following is a brief enumeration of the activities of the Live Stock Branch during the past year:—

Horse Division.

DISTRIBUTION OF PURE-BRED STALLIONS.

During the year the work of loaning stallions was continued. The original intention of the policy to loan stallions in the outlying and newly settled districts is being closely adhered to. Stallions have been supplied to many new associations in outlying districts which otherwise would be forced to use scrubs, as the people are unable to purchase pure-bred animals for themselves. The branch has purchased, since the inception of the policy in 1913, some 158 horses. These have been distributed from Cape Breton Island to the new districts of British Columbia and up in the Peace River country. To date only eight of these stallions have died. Considering the varying conditions under which these horses are kept, it is really a remarkable showing. As a whole, these horses have been particularly healthy, and have left a high percentage of good, serviceable colts. Many letters and reports have been received during the year from various sections of the country telling of the great improvement that has been brought about by the strong prepotent blood of the pure-bred. Many associations sent in renewal applications, although the stallions had been with them three or even four years.

In addition to improvement in the horse stock, the value of sticking to one breed and the advantage of co-operation among the breeders is slowly but surely taking root. Districts that formerly had the loan of stallions from this branch have this year reorganized their associations into clubs for the purpose of hiring horses. In several cases, at least, clubs would not have been formed had it not been for the fact that the value of co-operation among the breeders and the advantages of using a good stallion had already been demonstrated.

FEDERAL ASSISTANCE TO HORSE BREEDING.

This policy of allowing a district to organize a club for the purpose of hiring a good stallion for the use of the members is proving particularly popular. The reports show that the clubs are hiring the best stallions to be found in the country.

This will have a two-fold influence upon horse breeding. The generous patronage given to good horses will result in having a larger number of high-class colts than heretofore. Moreover, the fact that the clubs are hiring the best horses will result in the importers bringing a better class of stallion into the country, while our own breeders will be encouraged to use not only the best stallions, but to procure the best mares in their efforts to raise the high-quality class of horses required. This policy has received the favourable commendation of experienced breeders throughout the country. Time and again letters have been received stating that it is undoubtedly the best policy at present in operation in any horse-breeding country of the world. From the number of applications already received there will undoubtedly be five or six times as many clubs in operation during the season of 1917 than there were in 1916. From the inquiries for good stallions throughout the country, it would appear that the farmers are again giving serious attention to horse breeding.

During the year, in addition to the several thousand horses purchased for war purposes, some 12,000 were shipped from eastern points to the western farms. Saskatchewan dealers also bought largely in Manitoba and in Alberta. Unlike other classes of live stock, the prices of horses have not been enhanced by war conditions. However, everything considered, the average price has been fairly good. Reports go to show that some sections of the country have sold rather short. Particularly is this true in the case of good, young mares. Farmers to-day would be wise not only to retain their good, young mares, but to breed them to the best stallions within reach. Horses are not a class of live stock that a farmer can go out of to-day and step into to-morrow. If the best results are to be obtained and a constant steady supply kept up, their breeding must be given steady, persistent attention.

Cattle Division.

DISTRIBUTION OF PURE-BRED BULLS.

In 1913 the policy of loaning pure-bred bulls to associations specially organized under rules laid down by the Live Stock Branch was inaugurated. Each season the number of applications has been very large, and the filling of same has practically absorbed the annual supply of suitable bulls. On December 31, 1916, the number of bulls in the hands of associations was as follows:—

Breed.	British Columbia.	Alberta.	Saskatchewan.	Manitoba.	Ontario.	Quebec.	New Brunswick.	Nova Scotia.	Prince Edward Island.	Total.
Shorthorn	19	181	256	69	69	126	2	11	21	754
Ayrshire	10	1	3	.....	5	189	12	25	9	254
Holstein	13	5	18	8	13	42	2	3	2	106
Hereford	....	15	13	9	2	3	.....	.....	.....	42
A. Angus	1	7	6	6	1	.....	.....	.....	.....	21
Canadian	....	.....	.....	.....	.....	23	.....	.....	.....	23
Jersey	6	.....	.....	.....	.....	1	1	2	...	10
Guernsey	1	.....	.....	.....	.....	.....	.....	2	.....	3
R. Polled	1	.....	1	1	.....	.....	.....	.....	.....	3
	51	209	297	93	90	384	17	43	32	1,216

These sires are loaned for only one year at a time, and an association is required to meet the cost of maintaining an animal as long as it remains in its hands. The department reserves the right to inspect the animals at any time and withdraw assistance in the event of it being found that an association is not living up to its agreement. An association may renew its application for the loan of the same animal at the expiration of its term, and, if all the requirements have been complied with, such applications are promptly approved. When necessary the sires are exchanged, but only for animals of the same breed. All bulls are inspected at least once a year by regular officers of the Live Stock Branch. By their advice and recommendations our inspectors are able to do much towards promoting the objects of the associations, and, in addition, it has been found that the bulls are kept in much more satisfactory condition when inspections are made regularly. Usually one inspection a year is made, but when it is found necessary two and even three visits are made.

The reports received indicate that in the majority of cases the sires placed have resulted in a marked improvement in the quality of the live stock of the districts affected. Such improvements usually result in increased interest in cattle raising, and in many cases districts assisted two or three years ago have now so increased their holdings of cattle that the members have purchased bulls of their own and no longer require assistance from the branch. An effort is being made to encourage the members of the associations to feed their young stock properly so that an advantage obtained by superior blood will not be lost through unintelligent handling.

CAR-LOT POLICY.

To effect a more equal distribution of our live-stock population, the granting of assistance through the Live Stock Branch to farmers wishing to secure good breeding stock has been authorized. Under this policy the department pays reasonable travelling expenses of the representative of individuals or associations from any section of Canada desiring to purchase one or more carloads of breeding stock in any part of the country, the expenses allowed to cover railway transportation and living expenses from the home of the purchaser to the point at which it is expected that the purchase will be made, also hotel expenses and livery expenses for the time which should be sufficient to purchase the consignment. No assistance in the payment of freight is rendered, nor is any responsibility assumed by the branch in connection with the purchase price of the consignment. Further, no assistance under the policy is rendered if stock is purchased for speculative purposes. This policy has been quite widely taken advantage of during the past two or three years.

In the fall of 1916 the policy was extended to admit of the payment of the expenses of farmers purchasing stockers and feeders at the stockyards in Western Canada. This action was deemed advisable in view of the need of maintaining in the country, if possible, the stocker and feeder cattle which would otherwise go across the line as in previous years. The results obtained are summarized in a concise form in the following table:—

STATEMENT of the Shipments of Feeding and Breeding Cattle from Union Stock Yards, St. Boniface, Manitoba, October, 1916, to March, 1917, when the "Car Lot Policy" was in force; also a Statement showing Shipments during a similar period twelve months previous.

	West Shipments.		United States Shipments.		Totals.	Totals.
	1915-16.	1916-17.	1915-16.	1916-17.	1915-16.	1916-17.
October	810	6,017	9,709	5,511	10,519	11,528
November	1,962	7,240	5,464	2,455	7,426	9,695
December	1,590	3,942	882	866	2,472	4,808
January	225	1,076	51	241	276	1,317
February	687	1,665	25	247	712	1,912
March	1,187	2,338	167	225	1,354	2,563
Totals	6,461	22,278	16,298	9,545	22,759	31,823

Comparing the periods, October to March, 1915-16, and October to March, 1916-17, if the same proportion had gone south last season as in the previous season, almost 23,000 unfinished and breeding cattle would have left the Dominion, while the actual figures show but 9,545. Taking the matter in another way, there were 22,278 head shipped to points in the country, as compared with 6,641 in the previous period—a conservation to the country of nearly 16,000 head. In addition, there were about 3,600 breeding and feeding cattle returned to the country under the "Car-lot Policy," from the Calgary and Edmonton markets.

RECORD OF PERFORMANCE.

The year 1916-17 has been a very hard one for most owners of dairy cows. Large numbers of cows, which, under ordinary conditions, would have been milked all winter, were allowed to go dry in the fall owing to the scarcity of grain, roots and silage.

It was not encouraging at any time after the spring of 1916 for a man to enter his cows for any kind of test for production. Notwithstanding these adverse conditions, the interest in the record of performance test shows no signs of abatement, and owners who have had to drop out of the test for awhile, in nearly all cases express their intention of commencing again as soon as feed conditions are better. A number of applications for entry of cows in the test have been received from beginners with small herds.

The number of herds in the western provinces from which cows are entered for test, is increasing steadily. The average production of the cows under test, and the percentage qualifying for a certificate is gradually increasing.

The inspectors on this work not only test the cows entered for the record of performance, but large numbers of others. In many cases there may be only a few of a herd under test, but the owner likes to know what the rest are producing. Very often neighbours bring samples of their cow's milk to be tested. Where milk or cream is being shipped, the inspector is often requested to test it. The work is appreciated, and is promoting the improvement of dairy stock and is leading to the adoption of better methods in its care.

The following is a brief summary of the work for the year:—

Number of cows entered in the test—	
Ayrshires	656
French-Canadians	44
Guernseys	27
Holstein-Friesians	628
Jerseys	192
Shorthorns	137
Total	1,684
Number of cows qualified—	
Ayrshires	223
French-Canadians	14
Guernseys	8
Holstein-Friesians	221
Jerseys	64
Shorthorns	50
Total	580
Number of bulls qualified—	
Ayrshires	8
French-Canadians	1
Holstein-Friesians	8
Jerseys	1
Total	18

Appendix.

The records tabulated in the appendix are for cows which have produced sufficient milk and fat to qualify, but which have failed to freshen within fifteen months after the commencement of test.

Ayrshires	28
French-Canadians	1
Holstein-Friesians	41
Jerseys	9
Shorthorns	13
Total	92

Sheep and Goat Division.

Sheep raising is assuming a role of great importance in live-stock production in Canada. The supply of wool and mutton products throughout the world are by no means sufficient to meet requirements. This is especially true of wool, which represents a necessity in the prosecution of the war for the manufacture of soldiers' clothing. Canadian farmers are manfully trying to cope with these conditions of scarcity, and are entering upon sheep raising with the determination to conserve and increase the country's flocks and raise the standard to a degree which will bring recognition to Canada as a premier sheep-producing country.

Assistance to Co-operative Associations in Preparing Wool for Market.—However, the sheep industry in the past by no means occupied the prominent position in Canadian agriculture which its importance demands. Realizing this, I instructed the officers of the Live Stock Branch in 1913 to undertake a study of the character of Canadian wool and sheep and determine what steps should be taken to effect an improvement in their status. Results of the investigations showed clearly that the

principal objections with wool obtained chiefly with condition. The quality of the scoured product for those grades produced here was most satisfactory. The fault lay with the preparation of the wool.

Under the conditions existing, Canadian woollen manufacturers were able to purchase their wool to better advantage on outside markets, owing to their being able to secure a uniform and dependable quality and a much cleaner product. A further objection to domestic wool was that it was neither classified nor graded.

In connection with the efforts of the department in conducting a propaganda for more and better wool, wool growers' associations were organized, and an appeal was made to the sheep-raiser to introduce modern methods of preparing the wool for market. Wool prepared by members of these associations was then classified by expert wool graders, supplied free of charge to the associations by the Live Stock Branch. As a result of this work, which has now been in progress for three years, wool is eagerly sought after by dealer and manufacturer, and commands a price greatly in advance of what breeders were able to obtain when following the old unsystematic methods.

Wool growers' associations are now organized in every province of the Dominion. In order to convey some idea of the manner in which the co-operative sales of wool are appreciated by the wool growers, the following review has been prepared of the progress of the work since its inception. In 1914, 206,129 pounds of wool were graded for societies organized in four provinces—namely, Quebec, Ontario, Manitoba, and Alberta. In 1915 the number of organizations formed for this purpose was increased to nineteen. Approximately 420,000 pounds were classified and offered for co-operative sale. In 1916 this amount had reached the total of 1,721,598 pounds, with a value of $579,678.69, and every province was represented.

Wools east of Port Arthur last year brought an average of 41·01 cents per pound, while wool west of that point brought an average of 31·53 cents. The difference in price per pound may be explained by the greater shrinkage in the wools of Western Canada, and the closer proximity of eastern domestic wools to the woollen markets of this country. It is worthy of note that over $500,000 has been received by the sheep-raisers of Canada during the present year through the medium of the co-operative wool sales.

Observations made with regard to the advantages to be obtained by the wool grower through the sale of wool in a graded condition reveal the fact that, in many instances, where wool disposed of through co-operative associations brought 36 cents per pound, a similar grade or quality of wool, grown in the same vicinity, marketed in a haphazard fashion, returned the producer only 28 cents per pound.

Another step forward in the co-operative movement, in connection with the sale of wool, has been the introduction of lamb sales. In the fall of 1916 the Antigonish, N.S., Sheep-raisers' Association disposed of over 2,000 head of lambs by co-operative sale. It is expected sales of this character will assume greater proportions next year.

The following tabular statement shows clearly the advance which has been made in co-operative wool sales in Canada since the inception of this policy:—

Name of Association.	Amount of Wool. 1914.	Amount of Wool. 1915.	Amount of Wool. 1916.
	lb.	lb.	lb.
Prince Edward Island—			
Prince Edward Island Wool Growers' Assn		5,496¼	28,176¾
Nova Scotia—			
Antigonish Wool Growers' Assn		12,271	17,322
Guysboro Wool Growers' Assn			1,119½
New Brunswick—			
Moncton & Westmorland Wool Growers' Assn			1,873
Sussex & Studholm Wool Growers' Assn		1,103¾	3,257
Quebec—			
Argentenil Wool Growers' Assn		6,372	10,608½
Beauharnois Wool Growers' Assn		8,601	13,607
Bedford Wool Growers' Assn		6,702	16,521½
Compton Wool Growers' Assn		12,849	24,404½
Megantic Wool Growers' Assn			3,998¾
Pontiac Wool Growers' Assn	12,000	43,657	52,590¼
Richmond Wool Growers' Assn		10,030	16,923¾
Sherbrooke Wool Growers' Assn		6,045	16,088½
Stanstead Wool Growers' Assn		9,936	13,958
Ontario—			
Manitoulin Island Wool Growers' Assn	15,742	20,295	17,989
Manitoba—			
Elkhorn Wool Growers' Assn		10,648	9,220
Manitoba Sheep Breeders' Assn	44,059	64,777	141,719
Saskatchewan—			
Saskatchewan Wool Growers' Assn			178,000
Alberta—			
Alberta Sheep Breeders' Assn. (Calgary)	95,137	105,883	385,675
Alberta Provincial Sheep Breeders' Assn. (Edmonton)		12,788	52,270
† Carstairs Wool Growers' Assn	11,039½		
‡ Central Alberta Wool Growers' Assn	18,216		
Lacombe Wool Growers' Assn	9,935	24,141	35,979
Pincher District Wool Growers' Assn		35,916	20,246
Southern Alberta Wool Growers' Assn			503 944
Cardston District Wool Growers' Assn			106·455
Vermilion Wool Growers' Assn		29,642	33·901
British Columbia—			
Vancouver Island Flock Masters' Assn			15,751
Total	206,128½	427,153	1,721,598¼

† United with Alberta Sheep Breeders' Association 1915.
‡ United with Lacombe Wool Growers' Association 1915.

Wool Warehouse.—Difficulties in disposing satisfactorily of the western wool, owing to the great distance from the consuming market, which is in the eastern provinces, made it appear advisable to establish a central warehouse in proximity to the woollen mills, where the wool may be shipped and stored until such time as would seem expedient for its sale. This will be located in Toronto, and will be in operation during 1917. The wool, as received from the associations graded by officials of the Live Stock Branch in the field, will be held for sale by the department, acting as custodian for the growers and subject to their order. Arrangements with the banks will permit the growers to receive from them a monetary advance upon grading statements and bills of lading after the wool is sealed in the cars at shipping point.

This undertaking was decided upon following a conference with western wool growers' associations, and as a result of an investigation of the situation by officers of the department. The market for Canadian wool is in the east, where practically all the woollen mills are located. There are no mills using wool in the grease in Western Canada. Largely owing to this fact, western growers have been unable in the past, even though the wool in the last three years has beeen carefully graded and assembled in bulk at several important shipping centres, to secure satisfactory competitive bids. Permanent storage capacity being unavailable, the growers have been obliged to accept whatever bids could be obtained and, consequently, have always been at a disadvantage in marketing their product.

Prizes for Fleece Wool at Fairs.—Prizes for wool in the fleece represent an innovation established, at the instance of the department through the medium of the Live Stock Branch, by many Canadian fairs during the year. A greater number of fleeces were entered in most instances than it was expected the first year would bring forth, and the interest the exhibits aroused upon display augurs well for a substantial increase in the number of entries in this class next year. Secretaries of fairs offering prizes were satisfied with the showing this department made, so much so that not only is a continuance assured, but other exhibitions have proposed introducing a similar classification in their prize lists.

Most of the eastern fairs had the prizes divided into three sections: fine, medium, and coarse, but two exhibitions included lustre as well, which makes the classification very complete, covering all types of domestic wool produced to any degree. In the Prairie Provinces four classes were provided, two for range or merino, fine and medium, and two for domestic, medium and coarse. Four, five, and in some instances as many as seven awards were given. Sheep-raisers alone were permitted to compete, manufacturers and dealers being excluded.

Wool Exhibit.—Greater interest attended the presentation of the wool exhibit than in any previous year. Consequently, its itinerary was extended and it was displayed at a greater number of fairs. It has already this year been shown at thirty-one fairs, from Vancouver to Halifax, and was visited by more than a million people. During that time, 84,900 copies of pamphlets upon the sheep and wool husbandry were distributed to people distinctly interested in the pursuit of this phase of the live stock industry.

Many new features this year were added to the exhibit. A very complete display of Karakule wool and Persian lamb-skins produced in Canada acted as an educational attraction, together with sheep-skins, pulled wool, slats, and their manufactured articles. Products of the home woollen industries of Canada were exhibited in an effort not only to introduce them to the consuming public, but to create a more widely spread interest in the development of work of this character by women in the home. Demonstrations, showing the most approved methods of preparing wool for market, and in grading and sorting, were given at every fair. At the Canadian National Exhibition, Toronto, a special educational feature was staged, in connection with the display of home-spun woollen fabrics, showing the process of manufacture from wool to yarn and cloth as spun and woven by hand.

Sheep Breeders' Directory.—A directory has been prepared of breeders of sheep in the different provinces. This comprises both pure-bred and commercial animals, and contains data of the class or grade of sheep, together with the number raised or for sale by each breeder. This information is for public distribution, and the plan is proving most useful in conserving breeding stock by serving to get prospective breeders more closely in touch with those who have animals of this character for sale. Under previously existing conditions, sheep suitable for breeding purposes were all too liable to find their way to the shambles.

Distribution of Pure-bred Rams and Boars.—The policy of loaning pure-bred sires to farmers' associations has now been in operation four years. Assistance of this nature is confined to districts where the farmers have difficulty in securing well-bred sires, or are in financial circumstances which restrict their ability to purchase the most suitable type of breeding male. In pursuing this work, it has been the purpose of the branch to limit an association to a single breed and advise persistent use of the original selection. Adherence to this system by societies has already shown results of the greatest benefit in fostering not only a keen desire amongst members to produce a better class of live stock but in creating, as well, a uniform type within a district. Live-stock breeding in Canada has never conformed to any distinctive standard. The farmer would in many instances, switch from one type to another radically different, without assuring himself whether the change would be advantageous or not. Not infrequently this caused undoubted injury and produced a haphazard in breeding which was not wholesome. An advance toward the establishment of the community system of breeding which obtains so satisfactorily in Great Britain, is a direct result of this policy of the branch.

As the following tabulated statement shows, fifteen hundred and twenty-three rams, and four hundred and sixteen boars of all the most prominent breeds have been distributed.

RAMS Loaned to Associations of Farmers. (Corrected to January 1, 1917.)

Breed.	Prince Edward Island.	Nova Scotia.	New Brunswick.	Quebec.	Ontario	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	Total.
Shropshire	86	100	23	229	30	9	5	82	1	535
Oxford Down	32	214	12	86	8	27	2	51	1	433
Leicester	15	8	14	262	54	3	3			359
Cheviot	5	4	3	16						28
Southdown	9	16	1	12	2				4	44
Hampshire			7	61						68
Lincoln			3	14						17
Suffolk						6				6
Cotswold				1	2					3
Total	147	342	63	681	96	45	10	133	6	1,523

Boars Loaned to Associations of Farmers. (Corrected to January 1, 1917.)

Breed.	Prince Edward Island.	Nova Scotia.	New Brunswick.	Quebec.	Ontario.	Manitoba.	Saskatchewan.	Alberta.	British Columbia.	Total.
Yorkshire.	2	10	4	107	16	7	24	20	3	193
Berkshire.	6	1	1	4	16	16	33	44	8	129
Poland China					1		9	4	2	16
Duroc Jersey						1	7	17	3	28
Chester White		6	1	32	3					42
Tamworth				4		2	1	1		8
Total.	8	17	6	147	36	26	74	86	16	416

Poultry Division.

Under the impetus given by the increasing export demand, the poultry industry of the Dominion has taken on new life. In no way is this more apparent than in the interest expressed by the individual farmer. Heretofore, poultry have not been seriously considered on many farms. During the past year, however, conditions have been such as to emphasize the importance and profitableness of poultry-keeping. The price of eggs has been unprecedented. Starting at a compartively low level last April, it showed a steady increase through the summer, fall, and winter months. A considerable quantity of eggs went out for export in the month of June and early July, and so heavy was the movement during the fall and early winter months that the Canadian markets were practically bare of Canadian eggs during January, February, and early March.

The very wet spring interfered with hatching to quite an extent and, as a result, the lateness of the pullets, combined with the particularly severe winter, mitigated against a maximum production of winter eggs, so much so that a considerable quantity of imported eggs was required to supply the consumptive demand.

The scarcity of feed has also affected the poultry industry, and many individuals who had not been accustomed to secure winter eggs rather seriously depleted their flocks last fall. Despite this fact, the high price of eggs last winter, when, in some instances, producers received as high as 78 cents or 80 cents a dozen, awakened such an interest that this spring there has been more attention paid to pure-bred poultry, more chickens hatched, and a greater endeavour made by producers everywhere to place the poultry business upon a practical paying basis.

The Live Stock Branch, through its Poultry Division, has kept in close touch with the market situation throughout the year. Every encouragement and assistance has been given to co-operative marketing, with exceptionally good results. The interprovincial movement of eggs has been encouraged and fostered, and efforts made to raise the standard and bring about that uniformity in quality which will serve as the best advertisement for the Canadian product in the export trade following the war.

In this connection, extended publicity has been given to the matter of uniform standards for eggs. Classes for eggs graded in accordance with these standards have been encouraged at all of the larger exhibitions with very creditable entries at many points. These standards are being adopted by the trade and used in connection with

the interprovincial movement of eggs. The egg exhibits and candling demonstrations at fairs have been continued. In all, 156 exhibits were made during the year, with an attendance of some 243,400 people. The candling demonstrations given in connection with these exhibits proved to be quite popular, it being estimated that some 98,000 people took advantage of the instruction given in the art of candling and grading eggs. Of those availing themselves of the demonstration, over 75,000 made application for candling appliances, which have been duly forwarded to them.

Eggs.

Canadian eggs continue to find favour on the British market, as is apparent chiefly from the enhanced price of from 2 cents to 5 cents a dozen which the Canadian product has commanded in comparison with that of the United States. The markets of Great Britain have taken all the Canadian surplus, amounting to between seven and eight million dozens. Their requirements were much greater than this, as is evidenced by the large quantities of United States eggs passing through Canada in bond, most of which have been re-packed for shipment in this country. The regulations recommended to and applied by the Customs Department with respect to the branding of the packages of all foreign eggs passing through Canada for export, has effectively overcome much of the misrepresentation previously occurring with respect to the sale of foreign eggs as Canadian. Indications are not lacking, however, that more stringent regulations are required with respect to the grading and labelling of our own domestic product, in order to adequately safeguard the interests of our future export trade.

The Co-operative Marketing of Eggs and Poultry.

The high prices prevailing for eggs and the keenness of competition for a quality product has given, during the past year, a strong impetus to co-operative organization. The older associations with an established connection have been unusually successful. The newer associations organized have also benefited materially from the increasing demand for Egg Circle eggs.

In all, last year some three-quarters of a million dollars' worth of eggs and poultry were marketed co-operatively throughout the Dominion. Of this, the Prince Edward Island Co-operative Association contributed a quarter of a million and the egg Circles in Ontario over a hundred thousand dollars' worth.

In addition to the organization of new units, the efforts of the department have been directed towards perfecting the older associations in a co-operative way. This is particularly true in Prince Edward Island and in some parts of Ontario, the Prince Edward Island Association having been described as perhaps having no equal in America with respect to its equity, finance, and truly co-operative spirit. This association is particularly strong financially, and has not only acquired its own property in Charlottetown but has added greatly to its warehouse accommodation.

In the newer fields, the work in the province of Alberta is showing special promise at the present time. During the winter a great many meetings were held, and the co-operative system of marketing fully explained. This spring a central receiving

station has been opened in Calgary, and the prospects are that another will be required in Edmonton at an early date. Increasing interest in this connection has also been shown among producers in both Saskatchewan and Manitoba.

THE EGG AND POULTRY MARKETS' REPORT.

In connection with the Markets Intelligence Service organized under the Live Stock Branch, special attention has been given to the matter of the egg and poultry situation. During the past year the sources of market information have been gradually improved and a tentative report issued weekly to a limited mailing list of the officers of the branch, and certain others especially interested. I am now arranging to give this report wider distribution in connection with the Markets Intelligence Service of this department, and already have had many very appreciative letters regarding same and the steps being taken to place the market situation fully and frankly before the people.

Federal Assistance to Fair Associations.

The establishment of the policy of increased grants to fair associations, which was commenced in 1915, proved so satisfactory that it was continued during the year 1916. Needless to say, all the associations which had benefited by this grant in the year 1915 applied for further assistance during the past year. The many letters received from secretaries and other officers of these associations proved that this policy was adopted by the department just at the correct time, and that without it many of the medium-sized and even some of the larger fairs would have had to suspend operations. The basis under which the grants were given was practically the same as in the previous year.

To fair associations which paid out at their 1915 exhibition for prizes in the utility classes of horses, cattle, sheep, swine, and poultry a sum of $5,000 or over, a grant was made equal to half the amount actually paid out, the maximum grant in any case not to exceed $5,000. The prize lists of these exhibitions were first submitted to the Live Stock Commissioner for his approval before being printed, and in this way many suggestions which later proved to be very useful were made. During the year 1916, twenty-eight fairs were given grants by the department, this entailing an expenditure of $109,375.72.

The Markets Intelligence Service.

Recognizing the need of information which would be of assistance to the producer in marketing his live stock in a more intelligent manner, the Intelligence Service was organized for the purpose of gathering detailed information regarding current live-stock prices, and the supply and demand for Canadian live stock and live-stock products. As the public live-stock markets are the centres where supply and demand are best indicated and where and index to the general live-stock conditions can best be secured, representatives were placed at all the large central live-stock markets in Canada. In addition to keeping in touch with the trend of the markets, the representatives have secured details as to prices; the different kinds of live stock have been

classified according to quality; the district in each province from which they came has been ascertained and the disposition of the stock procured. Arrangements are being made that the branch may be always in close contact with the source of production, in order that the future condition of the market may be correctly interpreted. The co-operation of the farm press has been secured in connection with the distribution, weekly, of this information and it is expected that a very efficient system in this direction will be perfected. The dissemination of this market data among all interested in the sale of live stock and live-stock products will give stability to the trade, tend to better uniformity of prices, consequent on a more regular supply, and further will create greater confidence in the future of our live stock industry.

DOMINION EXPERIMENTAL FARMS AND STATIONS.

The work of the Experimental Farms Branch has been actively pursued during the year. In addition to the experimental work carried on at the Central and Branch Farms, all possible attention has been given to the problems connected with maximum production of crops during the war.

The flax investigation work has been continued. Acre lots of fibre were grown in various sections of the Dominion. These have been gathered at the Central Farm, where a flax building has been erected and is now ready for the installation of machinery. The flax will be retted and scutched, and it will then be possible to form some opinion as to its quality as compared with flax grown in Ireland and other parts of Europe. Arrangements have been made for growing further experimental areas of flax during the coming season.

Plant pathological laboratories have been erected at Brandon, Man., and Indian Head, Sask. It is expected that the chief work at these will be the study of diseases affecting cereal crops.

Preparatory work, such as clearing and draining, were continued at the new Stations at Kapuskasing, Ont., and Spirit Lake, Que., and a large area on each is ready for crop this coming season.

Lack of buildings has delayed the work, especially with live stock, on some of the newer Stations.

During the year the following publications have been issued or are now in the press:—

The Annual Report of the Experimental Farms for 1915-16.

In the Regular Series of Bulletins—

No. 87. The Principles of Poultry House Construction, by F. C. Elford, Dominion Poultry Husbandman.
No. 88. The Preparation of Poultry Produce for Market, by the same author.
No. 89. Poultry Keeping in Town and Country, by the same author.

In the Second Series—

No. 27. Soil Fertility, by Dr. F. T. Shutt, Dominion Chemist.
No. 28. Flax for Fibre, by John Adams, Assistant Dominion Botanist.
No. 29. Cranberry Culture, by M. B. Davis, Assistant in Horticulture.
No. 30. Feeding for Beef in Alberta, by W. H. Fairfield and G. H. Hutton.
No. 31. Gopher Destruction, compiled by J. H. Grisdale.

In Pamphlets—

No. 14. The Home Vegetable Garden, by W. T. Macoun, Dominion Horticulturist.

In Circulars—

No. 12. The Black or Stem Rust of Wheat, by H. T. Gussow, Dominion Botanist.
No. 13. Garden Making on Vacant Lots, by W. T. Macoun, Dominion Horticulturist.

Special Circulars—

No. 1. Grain Growing on the Prairies, by J. H. Grisdale.
No. 2. Maximum Crops, 1917, by W. L. Graham.
No. 3. Varieties of Grain recommended for Use in Canada, by Dr. C. E. Saunders.
No. 4. Notes on the Cultivation of Some Staple Vegetables, by W. S. Blair.
No. 5. Preparing Farm Horses for Summer Work, by E. S. Archibald.
No. 6. Produce more Poultry Products, by F. C. Elford and Geo. Robertson.
No. 7. The Dairy Cow, by E. S. Archibald.
No. 8. Feeding of Swine, by Geo. Rothwell.
No. 9. Recommended Varieties of Field Roots, by F. S. Browne.
No. 10. Field Beans, by W. L. Graham.

In 1916, crop conditions, on the whole, were much less favourable than those of the record-breaking year 1915. In the Prairie Provinces, the prospects for a good yield of cereals were excellent up to the beginning of August, but during that month a serious attack of rust developed in Manitoba and Saskatchewan, which either destroyed the crop over large areas or materially lowered both yield and grade. Average yields throughout the Dominion were lower than in 1915.

Potatoes were a poor crop in Ontario and Quebec, but good in the Maritime Provinces and fair in the Prairie Provinces and British Columbia. Fodder corn also gave low yields.

Hay and clover gave record returns, with a total yield of 14,799,000 tons, an average of 1·86 tons per acre.

Increased prices helped to offset lower yields. The total value of the field crops of Canada in 1916 is estimated at $808,054,000, as compared with $841,297,500 in 1915.

Below are tabulated some data on the yields and value of the principal field crops of Canada in 1916. A table is also given showing the numbers of the principal classes of live stock in the Dominion during 1912-16, inclusive.

HARVESTED Areas, Estimated Yields, and Value of Field Crops, 1916.

Crop.	Area.	Yield per Acre.	Total Yield.	Weight per Measured Bushel.	Average Price per Bushel.	Total Value.
	Acres.	Bush.	Bush.	Lb.	$	$
Fall wheat	936,600	21·50	20,131,000	59·52	1·53	30,687,000
Spring wheat	11,942,900	16·75	200,236,000	56·61	1·29	258,687,000
All wheat	12,879,500	17·00	220,367,000	57·10	1·31	289,374,000
Oats	9,835,100	35·75	351,174,000	33·86	0·53	187,759,000
Barley	1,651,100	25·00	41,318,000	45·66	0·82	34,010,000
Rye	145,120	20·00	2,896,400	54·95	1·11	3,205,800
Peas	150,280	14·46	2,172,400	59·88	2·22	4,816,000
Beans	32,500	12·70	412,600	60·00	5·40	2,228,000
Buckwheat	341,500	17·50	5,976,000	46·35	1·07	6,375,000
Mixed grains	397,770	25·33	10,077,000	43·13	0·90	9,076,300
Flax	605,700	11·75	7,122,300	54·99	2·05	14,581,300
Corn for husking	173,000	36·31	6,282,000	56·51	1·07	6,747,000
Potatoes	448,800	136·20	61,128,000	...	0·81	49,654,000
Turnips, mangels, etc.	156,200	264·24	41,274,000	.....	0·41	16,761,000
		Tons.	Tons.		Per ton.	
Hay and clover	7,974,000	1·86	14,799,000	.....	11·52	170,504,000
Fodder corn	297,100	6·65	1,976,700	.....	4·92	9,725,300
Sugar beets	15,000	4·75	71,000	.....	6·20	440,000
Alfalfa	89,780	2·91	261,450	.....	10·70	2,797,300

LIVE STOCK IN THE DOMINION.

The following table gives the numbers of the principal classes of live stock in the Dominion for the years 1912-16, inclusive:—

Live Stock.	1912.	1913.	1914.	1915.	1916.
	No.	No.	No.	No.	No.
Canada—					
Horses	2,692,357	2,866,088	2,947,738	2,996,099	2,990,635
Milch cows	2,604,188	2,740,434	2,673,286	2,666,846	2,603,345
Other cattle	3,827,373	3,915,687	3,363,531	3,399,155	3,313,519
Sheep	2,082,381	2,128,531	2,058,045	2,038,662	1,965,101
Swine	3,477,310	3,448,326	3,334,261	3,111,900	2,814,672

Division of Chemistry.

The work of this important division during the past year has been satisfactorily prosecuted in spite of the fact that three of the assistant chemists were absent on active military service and great difficulty experienced in temporarily filling their places. It has been found necessary to lay aside for the time being certain of the investigations, but work upon these will be resumed as soon as opportunity permits. A very considerable amount of extra work in connection with the Dominion-wide campaign for an increased production of foodstuffs has fallen upon this division. This has included analytical work, correspondence, addresses, and the writing of special articles on matters pertaining to agricultural operations and farm life.

As already indicated, the chief energies of the division have been directed towards giving assistance to the man on the land, in the care and use of manure, in the choice of fertilizer, in the purchase of feeding stuffs, etc. In this connection from 1,500 to 2,000 samples have been received, examined, and reported on. These included soils, naturally occurring fertilizers, limes and ground limestones, fodders and feeding stuffs, insecticides and fungicides, well waters, etc. We believe that this phase of the division's work has been found of very considerable value to the farming communities.

The total number of samples received for examination, and reported on during the year, was 3,736, about 1,500 of which constituted samples collected in connection with special investigations and matters of research.

The work of examination of flour samples, representatives of flour purchases made by the British War Office through the Department of Agriculture, has continued throughout the year. In all 704 samples have been analyzed as to water-content, and there has also been a very considerable amount of investigatory work done on the various methods in use in this determination, with a view of ascertaining their relative accuracy.

The Meat Inspection Division of the Health of Animals Branch submitted during the year 851 samples of examination and report. These comprised lards, tallows, oils, preserved meats, sausages, colouring matters and dyestuffs, preservatives, pickling solutions, spices and condiments, evaporated apples, and waste, etc. In addition to the analysis of these samples to learn if they met the requirements of the food stan-

dards, work of an investigatory nature has been undertaken in connection with certain newly introduced cures for meat products, methods of sampling and analysis for vegetable canned goods, and several other matters of considerable importance relating to the products of the packing-house industry.

The investigational work with fertilizers, continues to yield interesting and valuable data. During the past year this experimental work has been extended to other Stations of the system where conditions indicate the desirability of attempting the solution of soil fertility problems by this means.

In this connection the co-operation of a large number of farmers throughout the Maritime Provinces and Quebec was enlisted to test, under varying conditions of soil and climate, the fertilizing value of dried ground seaweed. Many of the results indicate that this material is one of considerable promise in furnishing available nitrogen and potash.

It is satisfactory to note that the large and ever-increasing volume of correspondence on the subject of manures and fertilizers has received prompt attention. Numerous samples of soil submitted to the division with these requests have been examined as to their nature and essential characteristics. The results thus obtained have permitted reports as to the most suitable means for the soil's amelioration.

The interest in the value of lime and ground limestone for the improvement of soils that are sour or naturally deficient in lime continues to increase and, consequent upon this interest, a considerable number of soils have been examined for farmers as to the lime requirements. A number of limestones occurring in various parts of the Dominion have also been analysed with the view of determining their suitability for the manufacture of ground limestone.

In continuation of the investigation to ascertain the suitability of soil and climatic conditions throughout the Dominion for the growth of sugar beets for the production of sugar, varieties have been grown under special culture on the various Farms and Stations of the system, and the product analysed as to sugar-content and purity of juice. The results, as in the past, have been, on the whole, very promising.

The work on the influence of environment on the composition of wheat begun in 1905, has, through the assistance and co-operation of the Meteorological Service, been expanded and now constitutes a study in agricultural meteorology. The correlation of weather condition with crop growth which this extension of the work makes possible, promises to yield results of very considerable importance to Canadian agriculture.

It is gratifying to record that the interest of the farming community in the purity of their home water supply is maintained. There is no more important asset on the farm, looking to the health of the family and the thrift of the stock, than an ample supply of pure water. The results of the analyses of the past year might be taken as indicating more care in the selection of a location for the well and in the means for protecting the supply from pollution.

In the examination of soils from the several irrigation tracts in Alberta, fifty-five groups, comprising 225 samples of soil have been analysed as to their water-soluble saline content. The results have been used by the Irrigation Branch of the Department of the Interior in their re-classification of the areas involved into irrigable and non-irrigable lands.

The Division of Field Husbandry.

The main subdivisions as relating to the investigations being conducted by the Division of Field Husbandry at the Experimental Farms and Stations throughout the Dominion include:—

(*a*) Studies in the methods of culture and curing of field crops.

(*b*) Investigations of the relative merits of different crop rotations.

(*c*) Determinations of the costs of growing field crops under regular farm conditions.

(*d*) Tests of the influence of size and character of cultural implements on cost of crop production.

(*e*) Comparisons (in a limited way) of varieties of grain and forage crops as food producers.

(*f*) Experiments to show the value of underdrainage and irrigation.

At the Central Experimental Farm, Ottawa, work is hampered, due to the fact that suitable land is not available upon which to conduct the several experiments that should naturally be included. The main object at the present time is to provide supplies of fodder and grain for the upkeep of the live stock on the Farm. At the same time the following projects are under consideration:—

(*a*) Cost of production of field crops.

(*b*) Merits of different crop rotations.

(*c*) Methods of cultivation, including a test of deep ploughing versus shallow ploughing and subsoiling.

(*d*) Merits of commercial fertilizers as a partial substitute for barnyard manure.

(*e*) Value of underdrainage.

WEATHER CONDITIONS AND CROP NOTES.

The season was most unfavourable for seeding operations. The weather was excessively wet, making work on the land tedious and discouraging. After repeated interruptions, seeding was completed out of season, some areas being sown two and three times to secure a stand. However, growth was rapid, with prospects of a fair harvest. Hay grew luxuriantly, and a bumper crop of good quality resulted. Grain also did well but ripened prematurely, thus giving a low yield of inferior quality. Roots, forage corn, and potatoes were only fair, but favourable harvest weather prevailed. Conditions for fall ploughing, which was completed in good season, were also satisfactory.

COST OF PRODUCTION OF FIELD CROPS.

The data contained in the accompanying table comprise yields, and costs of production of corn, oats, and hay grown under field conditions.

Cost of Production of Field Crops, Central Farm, 1916.

Crops.	Area.	Yield per acre.		Cost to produce.		
	acres.	tons.	bush.	per acre.	per ton.	per bush. cents.
Ensilage corn	33	12·46		$27 44	$2 20	
Oats	39		44·4	16 23		28
Oat straw	39	1·19			3 26	
Hay	33	4·62		19 97	4 32	

CROP ROTATIONS.

The most important field of investigation is that with crop rotations. This work has been in progress at the Central Farm for many years, and at present thirteen rotations varying in duration and treatment, are permanently located. These rotations are being closely observed and studied, keeping in mind the following factors:—

(1) Their ability to supply different crops in the proper proportions for certain needs.
(2) Their power to keep weeds in check.
(3) Their comparative profit.
(4) Their effect on the fertility of the soil.

Five regular farm rotations are under way according to the following outline:—

Rotation "A" (five years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass; clover hay, dressed with manure in autumn; timothy hay, field ploughed in August, top worked and ribbed up in October; grain, seeded down with red clover to be ploughed under the following spring when the succeeding hoed crop is corn.

Rotation "B" (five years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass seeds, top dressed with manure in autumn; clover hay, ploughed in autumn; grain seeded down with clovers and grass; clover hay.

Rotation "C" (four years' duration).—Hoed crop, manured; grain, seeded down with clover and grass; clover hay; timothy hay, field ploughed in August, top worked and ribbed up in October.

Rotation "D" (three years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass; clover hay.

Soiling Crop, Rotation "R" (three years' duration).—Corn for early fall feed, manured; peas and oats to cut green, seeded down with clovers and grass; clover hay, to cut green.

The accompanying table contains the chief items in connection with these rotations:—

Cost, Returns and Net Profits of Rotations "A," "B," "C," "D," and "R,"

Rotation.	Cost to operate per acre.	Value of returns per acre.	Profit or loss per acre.
	$ cts.	$ cts.	$ cts.
A (five years' duration)	17 73	19 32	1 59
B (five years' duration)	17 58	16 75	0 83
C (four years' duration)	17 69	17 16	0 53
D (three years' duration)	20 29	19 64	0 63
R (three years' duration)	18 73	24 66	5 93

The results for all crops in the rotations, with the exception of hay, were low, due largely to the very unsatisfactory weather conditions which prevailed during the seeding and harvesting season for grain especially.

SHALLOW PLOUGHING AND SUBSOILING VERSUS DEEP PLOUGHING.

This experiment has been under way for thirteen years. Two four-year rotations differing only in the preparation of sod land for corn or roots, as mentioned above, are used, but the results have not yet shown any decided advantage in favour of either method.

COMMERCIAL FERTILIZER AS A PART SUBSTITUTE FOR BARNYARD MANURE.

This experiment was designed in 1913 to supply information regarding the relative merits in regular farm rotation of:—

(1) No manure or fertilizer of any kind but pastured one year in four.
(2) Barnyard manure.
(3) Complete commercial fertilizer.
(4) Barnyard manure, together with commercial fertilizer.

The results are in favour of barnyard manure alone over commercial fertilizer alone for this soil, with the possibility of combining the two advantageously under conditions where manure is scarce or high in price.

Division of Animal Husbandry.

The Animal Husbandry Division of the Experimental Farms has made a satisfactory expansion in the scope of its work during the past fiscal year. The lines of work which fall to this division are the laying out and the superintending of feeding, breeding, purchasing, management, and housing of farm animals; the manufacturing and marketing of their products, together with all experimental and demonstrational work connected therewith on the Central Experimental Farm, and, in consultation

with the Director of the Experimental Farms and the Superintendents of branch Farms, the supervision of similar work on branch Farms and Stations throughout Canada.

LIVE STOCK ON THE CENTRAL FARM.

The horses on this Farm are all of draught type excepting the necessary drivers. Among the draught horses are a number of excellently bred Clydesdale mares which are used not only for general farm work but also for breeding purposes. An excellent crop of filly foals was obtained during the past year, and already several mares have again dropped valuable foals this spring. Feeding experiments both with the working horses and breeding stock are being continued on the Central Farm in conjunction with somewhat similar work on the branch Farms.

The extremely important work with beef cattle is of necessity still curtailed for lack of sufficient housing accommodation. However, a few choice young steers were finished for baby beef, not only to demonstrate the profits from such work, but also that these animals be used for demonstrational purposes in lectures to the many visitors.

The herds of dairy cattle have improved rapidly during the past year. Good representatives may be found of four breeds, viz., Ayrshires, French Canadians, Holsteins, and Jerseys, as well as a few choice grades of the Ayrshire and Holstein breeds.

The milk production per cow has, amongst all breeds, increased largely during the past year. Some splendid records have been made by animals which were entered both in the Record of Performance and Record of Merit, all breeds showing a marked increase in maximum production and maximum profits. Many pure-bred animals from these herds are annually sold for a moderate price to breeders throughout Canada, it being the object in the making of these sales, to place this stock where the greatest amount of good may be done. A large number of experiments in the feeding, breeding, and handling of dairy cattle have been conducted during the past year. An increasing number of experiments with equipment, such as milking machines, have been conducted. Special attention also has been paid to the feeding and rearing of young stock, and a large number of calf-feeding experiments have been conducted.

Experimental work along the line of dairy manufacturing is continuing to hold a very important place in the work of this division. The manufacturing, curing, and marketing of many dairy products, such as butter, fancy cheeses, cheddar cheese, and the like, has received all attention possible under the existing circumstances. With the construction of a more capacious dairy, the amount of experimental work will be largely increased. From this division also has been distributed, to thousands of Canadian farmers, a large amount of information regarding dairying, as well as free forms for the keeping of cow records.

The sheep on the Central Experimental Farm have again shown a marked improvement both as to numbers, quality, condition, and profits. Only two breeds, viz., Shropshires and Leicesters are represented on this Farm. However, from these flocks a number of excellent breeding animals have been distributed to branch Farms and to sheep breeders throughout Eastern Canada.

Swine raising has again demonstrated itself as one of the best-paying branches in this division. Three breeds are represented in this herd, viz., Yorkshire, Berkshire, and Tamworth. Large numbers of young pure-bred animals have been sold during the past year for breeding purposes. Again a large number of feeding experiments have been conducted both under summer, fall, and winter conditions; these experiments dealing with more economical feeding, the choosing of superior foodstuffs, both for raising on the farm and to be purchased on the markets, the saving of labour in the feeding of hogs, and many such economic problems.

ASSISTANCE TO BRANCH FARMS.

The Dominion Animal Husbandman has visited the branch Farms and Stations throughout Canada and continued to be of assistance to the Superintendent of these Farms. In conjunction with the Superintendents, and under the supervision of the Director of the Experimental Farms, many new lines of live-stock work have been initiated. In addition a large number of sketch plans of buildings proposed for these branch Farms and Stations have been made by this division, which plans have been approved of and completed by the Department of Public Works. By such means of co-operation, building work on the branch Farms has been facilitated and the buildings constructed are better adapted both for the purpose for which they are intended and as an example to the farmers in those provinces. It may be again recorded that the modern buildings on the Dominion Experimental Farms are being copied, in their essentials at least, by a large number of both the small and extensive live-stock breeders throughout Canada. Such is then a tremendous influence toward more modern, sanitary, and economical farm structures.

MISCELLANEOUS.

The regular correspondence of this division has again increased more than 30 per cent over the previous year. Every possible assistance has been given inquiring farmers along the lines of maintenance of live stock, feeds, feeding, methods of breeding and general management for improved health and increased profits. The increase in correspondence again shows the greater confidence which Canadian farmers have in the work of this division.

A most gratifying result of the work is the increasing interest of the Canadian farmer in improving of his live-stock buildings. This division has continued to assist Canadian farmers in every way possible toward the planning of new or the remodelling of old farm buildings. Over 550 blue-prints of modern farm structures to suit the individual needs of farmers inquiring, as well as photographs and brief specifications, have been distributed during the past fiscal year.

Members of the staff of this division have judged at a large number of agricultural fairs, assisted at many agricultural short courses, and have addressed a large number of meetings throughout Eastern Canada during the year ending March 31, 1917.

DIVISION OF HORTICULTURE.

The season of 1916 was one of the most unfavourable for fruit that has been experienced for many years in Ontario. A very wet spring and early summer was followed by an extremely dry, late summer and early autumn, with the result that disease injured the crop to a marked degree while the weather was wet, and drought injured it when the weather became dry. In the orchards at the Central Experimental Farm, five sprayings were necessary to control the apple scab, and some varieties of apples were sprayed six times. During the month of September apples dropped badly, as the ground had become very dry. Notwithstanding the unfavourable conditions, the largest crop of apples in the history of the Farm was harvested, and other fruits bore medium crops.

New Apples.—The many new varieties of apples originated at the Central Experimental Farm have attracted much attention. Collections of these were shown at various exhibitions in 1916. Some of the most valuable are seedlings of McIntosh Red and Northern Spy, there being varieties among them having somewhat the same flavour as these well-known sorts but different in season, thus ensuring a season for apples of the McIntosh type from summer until winter, and of the Northern Spy type from September until late winter, and being hardier than the Northern Spy. The best of these have been named and are being tested at different points throughout Canada. Some of the McIntosh seedlings which are of the greatest promise are named Melba, Joyce, Brock, and Pedro; and of Northern Spy seedlings, Thurso, Rocket, Donald, Elmer, and Niobe. As there are too many varieties of apples already on the market it is not desired to recommend these for general planting until they have been thoroughly tested in a number of places. A bulletin entitled "The Apple in Canada—Its Cultivation and Improvement" was prepared by the Dominion Horticulturist and published during the year.

The varietal and cultural work with fruits, vegetables, and ornamental plants was continued at the Central Farm much as in previous years, although the absence of two assistants on active service was much felt, and the development of certain features of the work was delayed on this account.

The breeding of new varieties of fruits, vegetables, and flowers was continued in 1916, and many new crosses and selections made. The Early Malcolm corn and Alacrity tomato, developed in the Horticultural Division, have proved very desirable varieties and were offered for sale by seedsmen in 1916. Especial attention is being given to the breeding of early and productive varieties of vegetables, as it is believed that there is great need for such in Canada.

About seven acres of land devoted to experiments with vegetables and strawberries was equipped with an overhead system of irrigation in 1915, and in 1916 this was in operation. Owing to the excessive rains, however, until nearly midsummer the strawberries and early vegetables were not in need of artificial irrigation, but it was used on the later vegetables with good results.

The campaign for the utilization of vacant land in 1916 to grow food crops, and the call to Canadians to increase production everywhere, together with the opening of an information bureau to which any one desiring information might apply, resulted

in greatly increasing the correspondence of the Horticultural Division, as a large proportion of those who wrote desired information in regard to the growing of vegetables. To help meet the demands for such information, two pamphlets were prepared by the Dominion Horticulturist, one of four pages and entitled "The Home Vegetable Garden," and another sixteen page one called "Garden Making on Vacant Lots, and The Home Vegetable Garden." These two pamphlets, of which large editions were published, seem to have met the needs of the people very well, and they have been asked for in large numbers, many cities and towns having taken up the utilization of vacant lots as a civic undertaking. It is believed that the production of vegetables will be greatly increased in 1917.

BRANCH FARMS AND STATIONS.

The greatest amount of new work in horticulture was done at the two new Experimental Stations at Morden, Man., and Summerland, B.C., in 1916. Little planting had been done at the Morden Station in 1915 with the exception of the planting of Caragana hedges, which were to act as windbreaks for the future orchards, but in 1916 an orchard of between nine and ten acres, consisting of apples, crab apples, and plums was sent out. Between the rows of permanent trees were planted some 27,000 apple seedlings of the hardiest known varieties. These trees, in addition to the Caraganas, will be windbreaks for the named varieties, and from them it is expected to obtain at least a few good hardy sorts. Plantations of brush fruits were sent out, and experiments in the growing of vegetables and ornamental plants begun.

The experimental Station established at Summerland, B.C., in the Okanagan valley, has already made good progress in horticultural work. Orchards of the principal fruits were set out in the spring of 1916, and the trees made a good start. A carefully planned series of irrigation experiments with fruit trees was laid out, from which valuable information should be obtained. Vegetable experiments and experiments with flowers were also carried on in 1916. Already a considerable number of horticulturists have been attracted to this Station which, though established but a short time, has become well known in the valley.

The horticultural work on the older branch Farms and Stations was continued much as usual. There is being accumulated at these places a mass of useful information in regard to horticultural plants and their cultivation and how they succeed in different parts of Canada that is invaluable both to the new and old settlers. These Farms and Stations have also proved bureaus of information to those desiring to grow vegetables during war times to aid the Empire.

Cereal Division.

THE SEASON.

The year 1916 proved one of the least favourable years for cereals since the establishment of the Dominion Experimental Farm system. In some parts of Canada excellent crops were produced, but the areas where small or injured harvests were reaped were unusually large. In the east a great area of country suffered from exces-

sive rains in spring which continued well into the month of June, with the result that many fields, which would have been sown with cereals, had to be treated in some other way; and among the fields which were sown many were so wet that the young plants started under very adverse conditions. The long period of wet weather was followed very quickly by intense heat which continued almost up to harvest time, and prevented the grain from filling out properly. Such a season was particularly hard on cereals and the yields were almost invariably small throughout the area in question.

In the great grain-growing provinces of Central and Western Canada there were some districts which produced excellent crops, but the total yield of grain in the three provinces was rather low. Rust, frost, and hail all did an unusual amount of damage, though there were some favoured localities which escaped all three. Southern Alberta was perhaps the most fortunate. The worst damage from rust occurred in southern Manitoba and in southeastern Saskatchewan. The damage from this disease became gradually less as one passed from the southeastern towards the northwestern section of the great plains.

An altogether exceptional frost, which occurred about the 10th of August, damaged grain on many of the low-lying fields over a very large section of country in the northern part of the settled portion of Alberta and Saskatchewan.

While there was perhaps no large area of country which suffered particularly from hail, there was unusual damage from this source in many districts, the number of severe storms being quite abnormal.

While it is regrettable that the season of 1916 should have fallen so much below that of 1915, in regard to the yields of cereals, it must be remembered that the previous year was extraordinarily favourable, and any comparisons which are to be made should take into account the average crop for a series of years rather than the wonderful crop of 1915.

VARIETY TESTS.

While the weather at Ottawa was decidedly unfavourable for cereals, and while the tests of varieties were therefore carried out with unusual difficulty, nevertheless fairly good results were secured and some progress was made along all lines. At most of the branch Farms good crops were obtained, and useful observations were made at all of them, except at one where the crops were entirely destroyed.

Among the hundreds of new cross-bred varieties and new selections which are under test, a few of the exceptionally promising sorts are now being propagated for more thorough trial in a greater number of localities. It is expected that in the near future at least one new variety of hulless oats, one new variety of hulless barley, and one new variety of hard, red early-ripening wheat will be introduced to the public. This work necessarily proceeds very slowly, as it is important to avoid the mistake of prematurely introducing varieties which have not been sufficiently tested. Many new sorts are now, however, approaching the end of what may be termed their probation period, and among these there are several of great promise.

MARQUIS WHEAT.

As usual, this extraordinary variety again won the highest international award last season and, in addition, it created what is probably a world's record for the yield of spring wheat on a large field, when a farmer in southern Alberta harvested 54,395 bushels from 1,000 acres of land. Such a magnificent yield would scarcely be credited were it not properly attested by trustworthy persons.

FREE DISTRIBUTION OF SEED.

In spite of unusual difficulties, a good stock of seed of the best varieties was secured for the distribution, chiefly from the Experimental Farms at Indian Head, Cap Rouge, and Ste. Anne de la Pocatière. As the farmers have become of late years very critical in regard to the quality of the seed supplied to them, an earnest endeavour is made to send out nothing but the very highest class of grain, and free from all impurities. Many appreciative letters are received from farmers who are delighted with the quality of the grain which they receive.

This year it was thought best to print an application form, on which a series of questions was asked, so as to easily obtain from the applicant a clear statement as to the conditions on his farm. The use of this application form so much facilitated the sending in of satisfactory applications, that a much larger number than usual was accepted. While the distribution is not complete at the time of writing this report, the statement may be made that the total number of samples of grain distributed this winter will be over 7,500, and that, in addition to these, about 3,000 samples of potatoes will also be sent out. This is a considerable increase over the number distributed in the previous year. The grain samples are sent to all parts of Canada, but the samples of potatoes distributed from Ottawa are limited to the provinces of Ontario and Quebec, the other provinces being supplied locally from their own Experimental Farms or Stations.

Division of Botany.

DESTRUCTIVE INSECTS AND PEST ACT.

The work in connection with the "plant disease" section under this Act is directed by the Dominion Botanist. During the year, special attention has been devoted to the elimination of disases of potatoes, by a system of field inspection during the summer, and by the inspection of the crops resulting, during fall and winter months. The systematic work clearly demonstrates the benefits resulting to farmers from attention to the control of diseases conveyed by planting tubers infected with black-leg, scab, rhizoctonia, etc., and particularly from the elimination of those groups of diseases which are conveyed by the tuber, but which do not show any symptoms on the same, as for instance, leaf roll, curly dwarf, mosaic, etc. The work also includes spraying demonstrations against late blight and rot.

PLANT PATHOLOGY.

Interesting progress has been made in the investigation of various phases of the white pine blister rust. This rust is destructive to all five-leaved pines, and also affects

wild and cultivated currants which act as secondary hosts. This important disease will receive increased attention in the near future, as it is being realized that otherwise serious damage may result to these valuable resources of our forests. Likewise, good progress is being made by the various field laboratories, of which three are now in full working order.

The St. Catharines laboratory continues its investigation of fruit-tree diseases, and a publication on the control of peach canker, which has now been satisfactorily worked out, is contemplated in the near future. The officer in charge also devotes considerable time to the problem of white-pine blister rust, which is firmly established throughout the Niagara peninsula.

The laboratory at Charlottetown for Prince Edward Island, and temporarily for Nova Scotia, has devoted much time and attention to the improvement of the Bermuda seed potato industry. The Bermuda growers obtain most of their requirements of the potato variety "Garnet Chile" from Nova Scotia, and during recent years it was found that certain strains of this variety from Nova Scotia resulted in serious failures when planted in Bermuda. The work done to prevent such losses to the Bermuda farmers, and most likely the loss of trade in this variety for the Nova Scotia growers, has been very successful and is being highly appreciated in Nova Scotia and Bermuda. Several special publications were issued by the officer in charge, on the control of Late Blight, Black-leg and Mosaic diseases of potatoes. Experiments were also conducted in Nova Scotia with dusting compounds for the control of apple scab, which have so far not been conclusive, though promising.

The laboratory for New Brunswick and Quebec has also much progress to report. The organization of the producers of potatoes, aiming at the improvement of the potato industry as far as freedom from disease, purity of variety, and increase in yield is concerned, has found many supporters.

Among the experiments may be mentioned, "control of club root," "Experiments on the control of powdery scab of potatoes," besides a general plant disease survey over the two provinces.

The Central laboratory finds its time very fully occupied by attention to the numerous inquiries received from farmers all over the Dominion.

The demand for nitro-cultures for legumes has increased tenfold since last year, and the first returns are now being received, which clearly indicate the advantages of treated seed versus untreated seed. Pure cultures are much more reliable in their results, and far more easily applied.

Of the more outstanding features of the work may be mentioned the activity of the divisional officers in connection with the blister rust of pines; various phases of research work were outlined, and experiments were conducted. The department participated in several conferences, held in Albany, N.Y., and Washington, D.C., being represented at these meetings by a special delegate.

During the year the Dominion Botanist investigated the cause and effect of one of the most destructive rust epidemics affecting principally the spring wheat in the western provinces, and the establishment of two new field laboratories for research on rust and grain diseases was authorized. One of these laboratories is situated at Brandon, Man., the other at Indian Head, Sask. Towards the close of the fiscal year

the appointment of Mr. W. A. Fraser, M.A., was authorized, to take charge of this special and highly technical work. Mr. Fraser, formerly Assistant Professor of Biology at Macdonald College, is regarded as an eminent authority on rust diseases, and his appointment promises results of value to the grain-growing provinces particularly. The Dominion Botanist suggested and had designed by one of his technical assistants—an experienced artist—material for a coloured poster on black or stem rust of wheat, which, together with an authoritative statement, will form a very acceptable and instructive publication. The poster just came to hand at the close of the year, and will be widely distributed throughout the western provinces.

ECONOMIC BOTANY.

During the past year more than 1,000 species of plants were received for identification, some of these being weeds, some medicinal, and others poisonous.

Considerable progress was made in connection with the herbarium, 628 mounted sheets having been added to the collection.

As in previous years, an exchange list of 429 species of plants was sent out to the leading botanical gardens of the world; 584 packets of seeds were received, and 697 packets were sent out.

Some experimental work on flax commenced in the previous year was completed, the flax fibre being pronounced by an expert as the finest he had yet seen in Canada.

Several plots of hemp for seed and fibre were grown, the report on the latter from the Doon Twines Company, Limited, being quite favourable.

Several varieties of Soy beans ripened their seeds satisfactorily, as also did several plots devoted to the culture of the Castor Oil plant.

Both black and white mustard, as the result of experiments carried on during the year, appear to be well suited to the climate of Canada.

Chicory roots, grown here during last season, were reported on by the Dominion Chicory Company as being "excellent in every way."

The summer of 1916 was specially favourable for the growth of broom corn, but the report of the Parker Broom Company, on the sample submitted, would indicate that for purposes of manufacture this crop is hardly suitable for the Ottawa district.

Several species of medicinal plants, of which the more important were opium poppy, anise, dill, belladonna, etc., were grown with fairly satisfactory results.

The use of chemical solutions of iron sulphate and sodium arsenite, as a remedy for noxious weeds, was tested in the case of dandelion on lawns, wild mustard, and Canada thistle, with favourable results.

Division of Forage Plants.

The scope of the work of the Division of Forage Plants is gradually being extended. New lines are taken up every year as the work progresses, the most important ones this year being production of seed of various forage plants and experiments with grass and clover mixtures for hay and pasture.

VARIETY TESTS.

A great number of varieties of field roots, including mangels, swede and fall turnips, carrots, and sugar beets, and also of Indian corn were tested as usual. Owing, however, to the very adverse climatic conditions, especially in the spring and early summer, the variety tests with the said crops did not give as good results as they usually do.

BREEDING WORK.

The breeding work is progressing very satisfactorily. It includes work with alfalfa, red clover, timothy, orchard grass, western rye grass, red top, meadow fescue, Kentucky Blue grass, English rye grass, mangels, and swede turnips.

In previous reports it has been explained that the breeding work with alfalfa has for its main object the production of hardy, uniform strains of superior-yielding capacity. It is gratifying to be able to report that, this year, several hardy strains which has been developed during the last few years showed almost complete uniformity, when reproduced by seed.

The breeding work with red clover is conducted chiefly with a view of producing hardy and, as a consequence, high-yielding varieties, it having been demonstrated through previous experiments that there exists a direct relation between degree of hardiness and yielding capacity in different so-called red clover varieties. Several "strains" have been developed which, according to experiences gained so far, are perfectly hardy in the Ottawa district.

The breeding work with grasses is also progressing satisfactorily. Most advanced is the work with Western rye and timothy, of which quote a number of uniform varieties are being developed.

SEED-GROWING EXPERIMENTS.

The experiments with field root seed growing, so successfully started in 1915, were repeated this year and gave results similar to those of last year's, i.e., they indicated, most decidedly, that seed of good qaulity can be raised in the Dominion and that seed raising, if carefully undertaken, is a rather profitable business.

In addition to the seed-growing experiments with field roots, some work was started this year with seed raising of alfalfa, red clover, and timothy. The principal object of these experiments, besides furnishing data as to yields and profits, is to ascertain what cultural methods give best results.

VALUE OF CANADIAN-GROWN SEED.

In order to test the veracity of the statements, often made in recent years, that home-grown seed of such crops as mangels, turnips, and carrots is at least as good as imported seed, a great number of experiments were conducted, not only at the various Farms and Stations belonging to the Experimental Farms' system, but also with private farmers, in most cases members of the Canadian Seed Growers' Association. Several varieties of mangels and turnips, seed of which was produced, in 1915, at the

Central Experimental Farm, Ottawa, Experimental Station, Charlottetown, P.E.I., Experimental Station, Kentville, N.S., Experimental Station, Fredericton, N.B., Experimental Station, Lennoxville, Que., and the Experimental Farm, Agassiz, B.C., were sown in comparison with ordinary commercial seed of the same varieties. The results were very much in favour of the Canadian-grown seed, as the crops realized from it were, in the vast majority of cases, larger than those obtained from commercial seed.

MISCELLANEOUS.

The herbarium material of grasses and kindred plants was largely added to this year, especially with forms from the foothills of the Rocky mountains, the district around Prince Rupert, B.C., and the Yukon Territory.

In this connection it may be stated that arrangements were made with the Canadian Klondike Mining Company, Dawson, Y.T., to conduct a large number of experiments of forage plants in the Klondike valley, the chief object being to investigate the hay-growing possibilities in the Yukon Territory.

Division of Bees.

The outstanding feature of the year 1916 was the unusually large crops of honey from alsike and white clover produced in Ontario, Quebec, and Manitoba, principally due to the wet spring followed by fine warm weather when the plants were in flower. The honey was sold at a fractional advance on the prices obtained the previous year, and was quickly bought up by housekeepers, sugar and canned fruits being high.

Bees are now being kept on fifteen of the Dominion Experimental Farms. The highest production in 1916 was at Ottawa, where thirty-five colonies produced 8,269 pounds of honey, an average production of 236 pounds, or $30.77 per colony. Ste. Anne de la Pocatière, Que., came second, producing 132 pounds per colony, and Invermere, B.C., third, with 118 pounds per colony.

During the summer of 1916 the apiarist visited each of the Farms at which bees are kept, and made detours into promising regions for honey production, visiting apiaries and investigating in detail the species of plants from which the honey is gathered, and the weather conditions favourable for abundant production. The conclusion was reached that honey crops that will compare favourably in size and quality with those to be obtained in the best regions in North America may be secured in selected places in the Ottawa River basin, especially in some of its northern valleys, where alsike and white clover, fireweed, and certain species of golden rod and aster form successive sources of honey. For the fuller investigation of this region, co-operative experiments with experienced beekeepers having apiaries situated at Montcerf, Que., Lytton, Que., and Thornloe, Ont., were carried out in 1916. Colonies of bees were also taken from Ottawa to representative locations at Sully, Que., and Kazubazua, Que., for the summer.

Other promising regions visited by the apiarist were the districts south and southeast of lake Winnipeg, certain rich farming and swamp lands in the Maritime Provinces, and the alfalfa districts of southern Alberta. Two days spent at Melfort,

Sask., indicate that beekeeping is worthy of attention as a side line in this district. An extension of the system of co-operative experiments to these and other districts has been organized.

Further study of the wild bees believed to be instrumental in pollinating alfalfa was made by the apiarist in southern Alberta.

Wintering bees outside, four hives packed in shavings in a case, in an inclosure sheltered from wind, without attention during the winter, continues to prove successful in Ottawa, the average results of the last four years showing that the bees so wintered did better than those wintered in the cellar.

An experiment in importing bees without combs by express from the south in spring was made at Ottawa and showed good promise.

Containers for granulated honey made of white bond paper waterproofed with paraffin wax have been tried as an alternative for tin cans, the cost of which has greatly increased.

The large earnings of beekeepers in East-Central Canada in 1916 has stimulated an increased interest in bees, and there has been a heavy demand for our new bulletin "Bees and How to Keep Them," published duing the year, especially the French edition.

The continued high rate of increase in the correspondence of the division, and calls to the apiarist, to which he responded, to contribute papers to the annual convention of the Ontario Beekeepers' Association at Toronto, the Quebec Beekeepers' Association at Montreal, the Beekeepers' Association of British Columbia at Vancouver, and the Manitoba Beekeepers' Association, the first three of which he attended in person, as well as from several smaller organizations and the press, serve to indicate the growing service that the Bee Division has been called upon and has been enabled to give.

Poultry Division.

As usual the work in the Poultry Department includes experiments along all lines that are of interest to the poultry producer.

This year special attention has been given to experiments on the cost of feeds, cost of production, incubation, brooding, diseases, etc. Experiments along these lines have been conducted at the Central plant and also to a limited extent at the various branch Farms.

ALTERATIONS TO CENTRAL PLANT.

During the year the Central plant has been rearranged to make it more convenient for the visitors to be able to see the plant and stock without the danger of having the experiments interfered with. A new entrance has been made to the front of the plant connected with a driveway which runs lengthwise of the plant parallel with Maple avenue.

The turkey plant has been refenced and two subways placed beneath the sidewalk. These subways connect the original plant with a portion of the forest belt that borders the Farm.

In order to assist in the turkey experiments, a small, rough farm of thirty acres was rented, upon which the range turkeys were reared. The young turkeys were placed on this farm when hatched, and remained there until fall.

HOUSES.

A hot-water pipe brooder house has been erected and is in use for the early spring chicks. This house was much needed for the early hatches and, so far, is proving quite satisfactory.

Unfortunately the water-fowl house on the duck plant was burned in the fall, which necessitated the transferring of the ducks and geese to the upper plant for the winter.

The work at those branch Farms upon which poultry is kept has been made more efficient by the completion of most of the buildings and equipment, and the installing of a fuller stock of birds. Owing to enlistment and the demand for men in commercial lines it has been difficult to retain some of the poultry men, and it was necessary to make shifts sometimes when most inconvenient.

DISEASES.

Through the courtesy of Dr. Torrence, Veterinary Director General, Dr. A. B. Wickware, Assistant Biologist, has been assigned to poultry work. This makes it possible to carry on investigation in poultry diseases that up to this time was not possible. Considerable work along poultry disease investigation is being conducted, and we are looking for good results in this department.

EXTENSION.

Even more than usual has the demand this year for poultry lectures, judges, etc. With the exception of Mr. Fortier, it has not been possible for the members of the staff to accede to this demand. Mr. Fortier, however, has had much of his time occupied in this way, and owing to lack of time many of the requests for lectures, etc., have had to be refused.

The survey work, started over a year ago, has apparently been very much appreciated, and has been the means of improving poultry conditions in the sections where the work has been conducted. During the year a second block of farmers in the province of Quebec has been selected. This block is in the vicinity of Ste. Anne de la Pocatière Experimental Station. Similar work to that which is carried on at Cap Rouge is being conducted there.

Through the Illustration Station Division, eggs have been distributed to the farmers operating these farms. The Experimental Farms or Stations in the three provinces, where this illustration work is being conducted, supplied to each of the Farms two settings of Barred Rock or White Wyandotte eggs. From these eggs very satisfactory reports have been received.

During the winter and spring there has been an increased demand for poultry information, through correspondence and through visitors. The high price of living,

coupled with the encouragement the Government is giving, seems to have stimulated more persons than usual to take up poultry-keeping. The inquiries come from those who live in towns and cities, as well as from farmers and specialists.

Tobacco Division.

The season of 1916 was no more favourable to tobacco growing than to most other crops. Speaking generally, the summer was too cool, and the rainfall was excessive.

At Ottawa the tobacco suffered from sharp alternations between heavy rainfall and drought. The latter, especially, prevented the full development of the tobacco plants.

In the province of Quebec the proportion of wrapper tobacco was considerably reduced by the poor development of the leaves on most plantations. The only areas spared were some hilly sections, having light, easily-drained soil, and which, in a normal season, give a yield below the average.

In Ontario the situation was slightly better, and, despite the unfavourable season, the yield was not too greatly below the normal.

The shortage in the tobacco crop generally throughout Canada led to a marked rise in prices. Ontario White Burleys at from 12 to 15 cents per pound. In Quebec the demand for the varieties grown there was very active, from 16 to 17 cents per pound being paid for a first-class product.

The short crop of wrapper and binder tobacco in the United States raised the price of these grades in Canada materially. Canadian-grown wrapper tobacco sold at 40 cents a pound and binder tobacco at from 30 to 35 cents.

The fact that such high prices were paid for the Canadian products would seem to indicate that the quality of the leaf was found satisfactory by the cigar manufacturer.

The growing of the yellow, hot-air cured tobaccos of the Virginia type, continues to increase rapidly in Ontario. The crop of 1916, about 500 tons, was the greatest yet produced.

The inspection work, as yet confined to Ontario, is already producing results. About one thousand farmers were visited, their tobacco crops examined, and tobacco growing problems discussed.

In the preparation of tobacco for the market the study of the fermentation of Canadian tobacco, with a view to its utilization in cigar manufacture, has been continued. It has already been shown in a general way that certain varieties are suitable for this purpose, and it has been also shown that the strength of such tobaccos may be reduced by successive fermentations. However, much work yet remains in order to determine the best method to obtain a mild, fragrant tobacco, without excess of free ammonia, and suitable for the manufacture of cigars.

From the Harrow Tobacco Station a distribution of White Burley seed was made, and from that at St. Cesaire, Que., a distribution of Comstack Spanish. In all, over 8,000 samples were sent out.

Inquiries from tobacco growers become more numerous each year. In addition to this correspondence, a number of articles on tobacco growing in Canada were prepared by this division, and appeared in the agricultural press and trade journals.

Division of Economic Fibre Production.

During the past year a new division has been organized in connection with the Experimental Farms Branch, called the Division of Economic Fibre Production. The object of this division is to carry on experimental work with fibre plants and to investigate fibre production and manipulation in Canada. Investigational work is being carried on more especially with reference to flax and flax fibre.

A complete experimental flax mill has been erected on the Central Farm at Ottawa. The mill is being equipped largely with the machinery at present in use in flax mills, but provision is being made for the installation of new machinery in order to determine the efficiency and economy of some of the newer inventions. The mill is provided with three tanks for water-retting experiments. It is also provided with drying chambers in order to determine whether the costly system of field drying can be dispensed with.

In addition to mill experiments, field experimental work with both flax and hemp is being conducted. These experiments are being carried on with a view to determining what areas in Canada are suitable to fibre production; what varieties and strains of seed are best suited to different localities; the proper amount of seed to sow per acre; the right stage to sow and harvest fibre crops; the extent to which flax reduces the fertility of the soil; and what fertilizers can be economically used with fibre plants.

During the past season experimental plots of flax, consisting of one acre each, were grown in various parts of Canada. While no conclusions can be drawn until fibre tests are made, it would seem that excellent fibre flax can be produced in many different sections of Canada. The Maritime Provinces, Quebec, Ontario, and British Columbia would seem to have special possibilities along this line.

Investigational work is being carried on as to the possibility of utilizing western seed flax straw for such commercial purposes as upholstering tow, fibre board and paper manufacture. Up to the present most of the work of this division has been along the lines of preliminary investigation, but it is hoped some concrete results will be available for publication another year.

Division of Illustrative Stations.

This being the second season during which the Illustration Stations have been in operation in the province of Alberta and Saskatchewan, results of the work carried on are now noticeable, particularly with the production of good seed.

The department undertakes, for the first year, to supply farmers operating the Stations, with the best seed procurable.

The varieties of seed chosen are selected and tested varieties grown on the Dominion Experimental Farms and proven most suitable to the climate and soil in which the Illustration Stations are located. In 1915, choice seed wheat was sown on the Illustration Stations, each having 17½ acres, which gave an average of 39½ bushels per acre. Each farmer also had 5 acres of Banner oats, which gave an average yield of 73 bushels per acre.

The farmers operating the Stations were allowed to reserve a certain quantity for their own seeding, the balance of the good seed being sold to farmers of the neighbourhood, at reasonable prices. In most districts farmers took advantage of this opportunity to secure well-graded seed. This year the advantage of good, well-graded seed is shown in several instances. The good seed, being nearly all of one variety, ripened earlier and gave a larger yield per acre than the poorly graded seed. Although the ripening season was late, in several instances the Marquis wheat grown on the Illustration fields and the crops grown from seed secured from the Illustration Stations were either ripe or far enough advanced to escape much injury from the early frosts. So noticeable has this been that farmers, when passing, made inquiries as to the variety of the grain growing, and in many instances gave orders for the seed.

FORAGE CROPS.

One of the special features of the work of the Illustration Stations is the introduction of good forage crops. Now that the prairie is being rapidly broken, and more live stock being pastured, farmers are finding it more difficult to secure sufficient prairie hay to carry them over winter, especially those going more into live-stock farming.

Two years ago this division made provision for two acres to be sown with western rye grass on each of the Illustration Stations. This season's crop in every instance has been very satisfactory. Reports to hand give yields of from two to three tons of dried fodder, and as high as 760 pounds per acre of pure clean seed was harvested, which seed was sold to the farmers in the immediate district. The rye grass from which the seed was threshed was well cured and made good feed for live stock during the winter. During the past season many special inquiries have been made as to where the seed for this forage crop could be purchased, how much seed should be sown per acre, and many other questions.

Alfalfa sown in 1915 has this year yielded heavy crops of excellent fodder, several stations recording as high as two and two and a half tons per acre. Next season it is the intention to save seed from as many fields as possible.

The alfalfa fields seeded in 1916 made a strong growth and a good stand was left as a cover to the roots over winter.

GARDENS.

No farm home is complete without a vegetable, fruit, and flower garden, and it is a pleasure to state that several stations had good gardens in 1916, although many others had none whatever.

The Dominion Horticulturist arranged and sent a suitable collection of seed to each Illustration Station. Several kinds of seed, which had been generated and their suitability tested on the Central Experimental Farm, were sent along with instructions and record sheets so that notes might be taken as to their suitability to the different sections of the Dominion. One pleasing feature about the gardens is the interest taken in them by the women and children, as in many cases they do all the work, and find it both instructive and profitable.

POTATOES.

Potatoes are used in every home in Canada, and little thought is given to varieties having good cooking qualities.

In 1916 the Experimental Farms supplied each operator of the Illustration Stations with two bags of the leading variety which had given good yields for a number of years, had good cooking qualities, shallow eyes and good shape, the object being to grow large quantities of good seed and also to have large quantities of one variety or at least one type of potatoes for sale. Farmers have suffered in having to accept lower prices because it was so difficult for a potato buyer to go into a country point and make up a full car of potatoes of an even grade in colour, size or in quality. Each farmer would offer a different variety which would mean a different colour and different qualities.

The potato crop in the province of Quebec varied. In the eastern section, potatoes were a big average crop, while in central Quebec the crop was extremely light. Potatoes in Saskatchewan and Alberta were fairly good, yielding from 150 to 300 bushels per acre.

POULTRY.

While the chief object of the Illustration Stations is soil cultivation and crop production, other departments of the farm receive more or less attention from the instructors.

One of the departments, in which all farms are interested and upon which considerable information is asked, is poultry. The flocks, as a rule, are not what they might be, in most cases being a mongrel lot, without suitable care and housing. After consultation with the Poultry Division at Ottawa it was decided to send from the branch Experimental Farms in the respective provinces, two settings of eggs to each of the Illustration Stations.

Therefore, in the spring of 1916, two settings were supplied the operators of the Illustration Stations.

Arrangements are made with the operators of the Illustration Stations to sell, at reasonable prices, settings of eggs or spare cockerels to persons wishing to purchase for breeding purposes.

The results from the first year's effort in this department are very encouraging. On some farms there have been this winter, a small bunch of pullets that will be used for breeding this spring. In several cases good cockerels were sold to neighbours, one operator of an Illustration Station in Saskatchewan supplying eight good breeding cockerels to his neighbours.

VISITS.

During the season, each Illustration Station was visited at least once each month by the inspector having charge of the work in each province, or by the supervisor. The object of these visits is to instruct the operators as to the best methods of cultivation and crop rotations, and also to give advice on general farm work.

The inspector for the province of Alberta, Mr. J. F. Irwin, made a total of one hundred and one visits, while the supervisor made one visit to each of the fifteen stations in that province.

The inspector for the province of Saskatchewan, Mr. E. C. Sackville, made seventy-five visits, while the supervisor made twenty visits to the fourteen Stations in the province.

The inspector for the province of Quebec, Mr. J. E. Montreuil, made eighty-two visits, and the supervisor twenty-eight to the ten stations.

MEETINGS.

During the year, eleven meetings were held in Alberta, five in Saskatchewan, and twenty in Quebec by the supervisor and the inspectors, assisted by the Director of Experimental Farms and other speakers from the Department of Agriculture. The operators of the Stations gave their experiences and results with the work, which greatly interested the farmers of the district.

A special feature has been introduced, that of holding meetings on the farms on which the illustration work is being conducted.

In this way farmers derive a great deal of benefit from seeing the crops grow and having the kind of crop and method of cultivation explained on the field.

Division of Extension and Publicity.

The work of this division has materially expended during the year. An Experimental Farms exhibit was staged, under its supervision, at 166 places throughout the Dominion. Had it not been for the clashing of dates in the case of some of the smaller fairs, and the fact that at some points the fair buildings had been taken over for military purposes, the number would have been considerably greater.

For distribution at these fairs, a number of additional exhibition circulars were brought out, there being now almost a hundred circulars in the series.

Numbers 5, 6, and 7 of "Seasonable Hints" were issued.

The efforts to increase the departmental mailing lists were continued, by means of taking names at exhibitions, by extending an invitation to join the list in each issue of "Seasonable Hints," and by mailing return cards to farmers. In these various ways, the division has increased the mailing lists by 42,450 names during the year.

The multigraphs operated in this division, in addition to handling a large amount of form work for the various divisions and branch Farms, have rendered possible the issuing to the agricultural press of a number of timely articles on a variety of farming topics. These have met with a very favourable reception, and it is planned to continue them during the coming year.

Experimental Station, Charlottetown, P.E.I.

Spring work started about a week earlier than for a number of years, and all cereals were sown by the end of May. Ample rainfall and good growing weather brought crops on rapidly. Hay and clover gave excellent crops, while the yields of cereals were higher than the average, although wheat suffered a little from blight and insects. Potatoes and corn gave full crops. Fall pastures remained good, and live stock went into the stable for winter in good condition.

Experimental steer feeding was carried on during the winter, and good prices were realized for the finished animals.

No building operations of any importance were carried on at this Station during the year.

Experimental Station, Kentville, N.S.

Spring opened with fairly moderate weather, and by the end of May seeding operations were well advanced. Moderate rains in June resulted in a splendid growth of all farm crops, but was not so satisfactory for fruit. Hay gave a much better crop than the previous year, but owing to dark weather in July, its curing was considerably delayed. Dry weather in August caused the roots and potatoes to suffer greatly, but corn was unusually good. The grain crop, on the whole, was a good one, and the apple crop was of good quality.

Experimental work in steer feeding was carried on during the winter.

No buildings were erected during the season at this Station.

Experimental Farm, Nappan, N.S.

Farming operations commenced about two weeks earlier than usual, and practically all grain was sown before the end of May. Cold and wet weather during June, however, retarded growth. Good weather in August enabled the hay crop to be cured and stored satisfactorily. Grain and root crops were good, while corn gave exceptionally good returns. The apple crop was light.

Some 35 acres were chopped, cleared, and stumped by the interned prisoners during the season.

A number of steers were purchased for experimental feeding in November, and a new steer-feeding shed was built. Various repairs were made to the older buildings on the Farm.

Experimental Station, Fredericton, N.B.

The spring was very dry, and farming operations began well, but heavy rains in June delayed seeding considerably. Heavy floods injured the crops on the low-lying land, but on the higher land the yield of hay was very heavy. The weather during July and August was most favourable for crop growth. The grain crop was good, but potatoes only yielded about 75 per cent of the average crop. Corn and roots also yielded well.

The pumping station, destroyed by fire in 1914, was rebuilt. Three colony houses for poultry were also built, and various repairs to old buildings carried out. A plant pathological laboratory in connection with the Division of Botany was erected.

Experimental Station, Ste. Anne de la Pocatière, Que.

Spring opened much earlier than usual, and seeding operations were started in good time, but were considerably hindered by rainy weather in early June. A severe drought was experienced in July and August, and this lowered the yields of all grains, potatoes, and hay. Good crops of roots were obtained.

A large amount of drainage work was carried on during the season.

Several buildings, commenced last year, were completed, and a new permanent poultry house was erected.

Experimental Station, Cap Rouge, Que.

Although unfavourable weather caused some delay in seeding operations in the district, this work was completed at the Station at about the usual time. Hay gave good crops, while cereals and roots were about the average.

A number of buildings on the Station were repaired during the season, but no new buildings of any importance were erected.

An additional area of some eight acres, lying at the northeast corner of the Station, was purchased and added to the Station area.

A great deal of work with live stock was carried on during the season.

Experimental Station, Lennoxville, Que.

Heavy rainfall during May held back seeding operations somewhat, especially on the low-lying land, and continued rain made haying very late, but this crop turned out very well, and was saved in good condition. The yield of grain was light, but corn produced a good crop. Potatoes gave only a light yield.

A new dairy barn was built during the season, and a dairy herd installed. Live stock work with sheep and steers for feeding experiments was also carried on.

A large amount of drainage work was accomplished.

Experimental Station, Spirit Lake, Que.

Preparatory work was carried on at this new Station under a foreman-manager. The interned prisoners formerly kept at Spirit Lake were removed, and the Station is now entirely under the charge of this department. Horses, implements, and other equipment have been purchased and installed, and a considerable amount of clearing and drainage work carried on.

A fairly large area has now been cleared, and will be ready for cropping in 1917.

Experimental Station, Kapuskasing, Ont.

A certain amount of clearing work has been carried on at this Station under the supervision of a foreman-manager, in preparation for cultivation and cropping this year.

A new barn, office building, and house for the stableman have been erected, as well as a water tank and power. A pump has been installed and a water system laid to maintain the water supply. Most of the lumber for the new buildings was cut, sawn and prepared on the Station.

Experimental Station, Morden, Man.

Further work with field crops and live stock has been carried on at Morden during the past season, and further work in the organizatikon of the Station has been continued. Work in horticulture has also been commenced. A new office building has been erected.

Experimental Farm, Brandon, Man.

Cold weather in the spring delayed seeding operations somewhat, but better weather during June and July gave promise that a normal crop would be obtained. However,

an attack of black rust, first noticed at the end of July, practically destroyed the wheat crop, and late oats and barley were also affected slightly; consequently, the cereal crop was much below average. A heavy yield of hay was harvested, and corn did well.

The main barn was remodelled during the season, but a disastrous fire occurred in December, which destroyed all the barns, together with feed, machinery, and other equipment. All the live stock, however, were saved. A temporary roof was put over the basement of the main barn, in order to house the live stock during the winter.

A plant pathological laboratory, in connection with the Division of Botany, was erected in the fall.

Experimental work in feeding steers has been carried on, all the animals showing good gains.

Experimental Farm, Indian Head Sask.

Seeding operations were delayed considerably by a cold spring, but more favourable weather in June and July caused the crops to make good growth. A large yield of hay was obtained. Some damage to root crops and corn was done by cutworms, and warm, damp weather in August caused rust to make its appearance, destroying a considerable amount of the wheat and late-sown oat and barley crops. Potatoes, fodder corn, and roots gave good yields.

A poultry administration building was erected, and also a plant pathological laboratory to facilitate work in the study of plant diseases.

Experimental work with steer feeding was carried on, and the finished animals were sold at an excellent profit.

Experimental Station, Rosthern, Sask.

A late spring delayed seeding at this Station, so that much of the crop was not put in until the middle of June. Dry weather in June caused the hay crop to be much smaller than usual. The grain crop promised well, but was totally destroyed by a severe hail-storm in August. The vegetable and flower gardens were also destroyed.

A new sheep barn was erected during the season at this Station.

Live stock work in the experimental feeding of steers was carried on during the winter.

Experimental Station, Scott, Sask.

Owing to cold weather in April, seeding was not started until later than usual, while rainy weather in May delayed operations still further. Warm weather in June and July brought on the cereal and hay crops rapidly, the hay yielding well. Although several hail-storms did some damage in the district, the crops at the Station did not suffer in this regard. Potatoes gave a good crop.

A new sheep barn and steer-feeding sheds were built.

A herd of steers for experimental feeding was purchased in the fall.

Experimental Station, Lethbridge, Alta.

The season at Lethbridge was normal. The hay crop was a little below the average. Slight hail-storms early in the season damaged the apple blossom, but did no

damage to the other crops. Some rust was noticed in the district, but no damage was done at the Station. The grain crops in general were good, and potatoes and roots also gave good yields.

Steers and lambs were purchased in the fall for feeding experiments.

No building operations were carried on this year.

Experimental Station, Lacombe, Alta.

Favourable weather in April allowed most of the grain to be seeded by the end of the month. A cold spell in May retarded growth a little, but prospects for an average crop were good. Unfavourable weather interfered somewhat with haymaking, and wet weather at harvest-time held back the gathering of the grain crops considerably. A killing frost in August did considerable damage to crops in some sections, and, although the yields were as high as usual, the grading was lower.

Work with live stock, including steer-feeding, was carried on during the season.

Experimental Station, Summerland, B.C.

Preparatory work was continued at this Station. Some field crops were grown, and work in horticulture continued. Irrigation work was carried out, and a further quantity of fluming put up in this connection.

Experimental work in steer-feeding was carried on during the winter.

No permanent buildings have as yet been erected at this Station.

Experimental Station, Invermere, B.C.

Exceptionally cold weather at the beginning of the growing season retarded growth considerably, but more favourable weather in July caused the crops to make good progress. Some damage to root and vegetable crops was caused by cut-worms. The alfalfa and clover crops were very good, while the grain yield and fruit crop were about average.

Some work in road-making was carried on during the season, but no new buildings were put up.

Experimental Farm, Agassiz, B.C.

Cold, wet weather in the early spring delayed seeding considerably, but the weather later in the season being more favourable, the crops made good progress. The hay crop was very good, and the cereal crops were about the average, good weather during August and September allowed harvesting operations to be carried out satisfactorily.

A great deal of work with live stock, including beef and dairy cattle, sheep and swine was carried on during the season, most of the animals giving good returns.

No building operations of any importance were carried on during the year.

Experimental Station, Sidney, B.C.

Field crops of cereals and forage plants were grown and variety tests of fruits and vegetables made. Corn for ensilage and alfalfa gave good crops, but root crops

were lighter than usual. The hay crop was good, and grain gave larger yields than expected. Pastures were a little short and dry, making it necessary to feed green corn. The quality of the orchard fruits was excellent and the yield a good one.

Some work in fencing, drainage, and laying out areas for various lines of work on the Station was carried out, and a shed for steer-feeding work and two poultry houses were erected during the season.

Substations.

Experimental work was continued at Forts Smith, Resolution, and Providence, in the Northwest Territories, Fort Vermilion, Grouard, and Beaverlodge, in northern Alberta, Salmon Arm in British Columbia, and Minto Bridge in the Yukon Territory.

Reports received from these points, together with samples of grain grown, proved of great value in obtaining information as to the agricultural possibilities at these far-distant points.

HEALTH OF ANIMALS BRANCH.

The Contagious Diseases Division of this branch is maintained for the purpose of preventing the introduction of the contagious animal diseases from outside sources, for the control and eradication of these diseases in the country, as well as the conduct of experimental and research work to determine certain facts, and to obtain definite knowledge to enable the department to deal intelligently with the many problems continually confronting it.

Although two pathologists and nineteen other officers of this division are on active service in Europe, there has been, during the past year, no cessation of activity in the various lines of work conducted in this division. While this has necessitated the making of many changes, the efforts to protect the live stock of the country from disease have been faithfully continued, not only in guarding against its introduction from abroad, but by preventing the spread of infection already existing among Canadian herds and flocks.

The nature of the duties performed by the officers of this branch is very frequently such as to provoke adverse criticism from those members of the general stock-owning and especially stock-dealing public, who, from want of thought or of experience regarding the disastrous effects of uncontrolled animal plagues, are inclined to look upon veterinary inspection with an unfriendly eye. It is therefore a source of gratification to find that the efforts of my officers in this direction are becoming more appreciated and understood, and that the work of controlling contagious diseases by the necessary compulsory methods is now being accepted by the stockmen as national and wise.

The statistics for the year 1916-17, which will be found in the special report of the Veterinary Director-General, indicate that the policies of my department are sound and practical, and effective in controlling contagious diseases of animals.

Glanders.

The very dangerous and highly infectious disease of horses, mules, and asses, known as glanders, has been practically eradicated from the greater portion of the

Dominion. During the last few years the most serious outbreaks have occurred in limited areas in the provinces of Alberta and Saskatchewan.

The success which has followed the slaughter of all the horses reacting to mallein, and the payment of compensation therefor, would indicate that it will also be possible to clear up the infected centres in the provinces in which it now exists. There is no doubt, however, that the department will be confronted in the future with new outbreaks throughout this country, as even the most careful measures will not absolutely prevent the importation of infection through some unobserved source.

There were approximately 224 horses destroyed for this disease during the past year, for which $21,928 will be paid in compensation, this being a slight reduction over the amount paid in compensation last year.

The mallein which is used by the inspectors of this branch for diagnostic purposes is all manufactured at the Biological Laboratory here, and during the past year over 14,000 doses were distributed to our officers.

The same policy has been enforced in dealing with this disease since 1905, and consists in quarantining suspected animals until they have been shown to be free from the disease by the mallein test. All reacting horses are destroyed and, after the lapse of a suitable period, the contact horses are again tested, and if no reactions are obtained the quarantine restrictions are promptly removed.

The same precautionary measures are taken with regard to the importation of horses from other countries. Those coming from the United States, if not accompanied by a satisfactory mallein test chart, signed or endorsed by an officer of the Bureau of Animal Industry, are held at the boundary port and tested there by one of my officers. Those arriving from Great Britain must be accompanied by a certificate signed by an officer of the Board of Agriculture and Fisheries, stating that no contagious disease of horses has existed in the district from which the horses came.

Horses accompanied by these certificates are not tested but are allowed entry after a careful inspection is made. This procedure has been found to be quite satisfactory, owing to the fact that these importations are almost entirely limited to valuable pure-bred stock, in which the disease is seldom seen.

DOURINE.

Excellent progress has been made in controlling this disease, which is largely due to the serum method of diagonsis.

Very great difficulty was experienced for many years in dealing with this insidious malady, owing to the impossibility of recognizing it until the infection had been widely spread. Affected animals do not always manifest symptoms, but they are just as capable of transmitting the disease. It was therefore necessary, before the serum method was discovered to keep animals under restriction for very long periods, during which breeding was not permitted. This entailed serious financial losses to the horse owners, especially so as this disease was first discovered on the range in one of the best horse-raising districts in Alberta.

Owing to the seriousness of the situation, the department decided to secure land for experimental purposes in the infected area, on which was established a research

laboratory. Dr. Watson, whose experience at the Biological Laboratory, Ottawa, specially fitted him for this work, was placed in charge, and after several years was able to perfect a method of serum diagonsis, which has proved to be of the very greatest benefit, as by this means the disease can be diagnosed in affected animals, although they may show no symptoms and appear in perfect health. There have been approximately 5,000 blood tests made, with only forty-eight positive results. The diseased animals have been slaughtered, and $3,900 will be paid in compensation.

With the exception of one case, all of these animals were found in the old infected districts in the province of Alberta. The disease has therefore been practically eradicated in Saskatchewan, where a few years ago it gave considerable concern. There is now every reason to believe that the officers of this branch will be able to eradicate this disease in this country in the very near future.

MANGE IN CATTLE AND HORSES.

Mange in cattle and horses has been found to a more limited extent than in previous years. This disease has never been prevalent in horses in this country, and any outbreaks that have occurred among these animals have been quickly controlled. In cattle, however, it has given the department anxiety for many years, as it has existed on the open range in the provinces of Alberta and Saskatchewan.

The disease was so widely spread that it was necessary, before I assumed charge of this department, to enforce general compulsory dipping operations over an extended territory. Sufficient progress was, however, made to change this very troublesome and unpopular procedure to one of individual quaranting of affected and contract herds.

The stockmen readily co-operated in the enforcement of these regulations, as they did not affect those whose herds were free from mange, and which had no history of having been in contact with infection. As, however, the infection is still on the open range, it is even now necessary to restrict the movement of any cattle from a defined area in these two provinces, as otherwise the most careful measures could not prevent the extension of the infected area.

Under the Special Mange Order, cattle cannot be moved out of this area unless they are accompanied by a veterinary inspector's certificate. Each shipment must be inspected by the veterinary inspector, and if the cattle are for any other purpose than immediate slaughter they must first be dipped twice under his supervision.

Good progress has been made, and approximately one hundred townships were removed from the requirements of this order during the past year.

Systematic measures are followed in dealing with this disease and in making careful inspections of all cattle in the mange area. A number of range riders are employed to ride the range and to report their findings to a veterinary inspector, who is given charge of a certain portion of the area. In this way it is possible for my officers to keep in close touch with the existing conditions throughout the centre territory covered by the order.

There were 1,450 animals found actually affected with this disease during the past year, and while the decrease in the number of active cases over the previous year is small, the infected area is yearly becoming more limited, and will enable the officers of this branch to concentrate their efforts with better results.

SHEEP SCAB.

Sheep scab has not been dealt with during the past year in any part of Canada, with the exception of Manitoba. In this province it still exists to a slight extent, fifty-four (54) cases having been detected in an infected district.

A thorough inspection has been made of all suspected flocks, and all diseased and contact sheep are being systematically dipped. All possible measures are being taken to eradicate this outbreak at the earliest possible date.

In view of the importance of keeping our flocks free from this disease, special measures are enforced for the protection of Canadian sheep from the introduction of infection from outside. Sheep from the United States imported for any other purpose than immediate slaughter must either be accompanied by a satisfactory dipping certificate, signed by a Bureau officer, or be held at the boundary for thirty days, during which period any action which may be considered desirable can be taken with regard to them.

ANTHRAX.

This disease is fortunately not at all prevalent in this country, and in the last five years it has only been detected in the provinces of Ontario and Quebec, where it has caused thirty-seven fatalities.

In view, however, of the many opportunities of introducing infection in fodders, grains, and hides, as well as in other indirect ways, from foreign countries, in which the disease is prevalent, it is fortunate that there has not been a larger number of cases.

My department supplies anthrax vaccine for immunizing purposes at cost. This is manufactured at the Biological Laboratory in Ottawa, and is forwarded to veterinary practitioners only after the premises on which the disease has been found have been quarantined and a veterinary inspector has supervised the proper disposal of the carcasses of animals dying from this disease, as well as all contact matter.

It is not considered wise to allow the veterinary inspectors to immunize the contact animals, and the owners must, therefore, give the department the name of the veterinarian whom they decide to employ to do this work, before the vaccine is forwarded.

RABIES.

There were approximately only nine animals found affected with this disease during the past fiscal period. It is very fortunate indeed that this troublesome malady, which is transmitted by the bites of rapid animals, chiefly the dog, and which is most important from a public health standpoint, has only been detected in a few areas in Ontario. While the fullest investigation did not result in determining the exact origin of the infection, the information obtained would indicate that the disease was introduced from New York state.

In view of the limited number of cases detected in this country during the past year, it has not been necessary to enforce a muzzling order, as the individual cases were dealt with by ordinary quarantine measures.

TUBERCULOSIS.

The suppression of bovine tuberculosis by reasonable practical measures has received very careful consideration for many years, but, with the exception of the Tuberculosis Order for dairy cattle, I have not so far been able to justify the changing of the old policy of the department.

Tuberculin is still manufactured at the Biological Laboratory in Ottawa and supplied upon the request of cattle owners to veterinarians, provided the owners agree to have all reacting cattle promptly earmarked. The veterinarian must report the result of the test on charts specially prepared for this purpose.

The department also assumes charge of herds for the eradication of this disease, and makes systematic tests free of charge. All reacting animals are earmarked, after which the owner can dispose of them under official supervision in any way he may see fit. Before the department takes action in these cases the owner must give his assurance that he will follow the advice of the inspectors of the department.

The inspectors also test pure-bred cattle for shipment to the United States, as well as those consigned to points in the province of British Columbia.

The Tuberculosis Order, which was passed in 1914, and which provides for departmental assistance to municipalities which decide to provide milk for their citizens from tuberculin-tested healthy cattle, has been satisfactorily enforced in Saskatoon. Unfortunately, however, other municipalities have not seen fit to take advantage of this order, owing to the fact that they were unable to license all dairies from which milk was obtained. In some cases, milk was imported from the United States, while in other cases the provincial legislation did not give the municipality power to pass by-laws which would make the tuberculin test compulsory.

The city of Regina came under the order, and the work of testing was well under way when the municipality discovered that certain provincial requirements made it impossible to comply with the requirements of the order. This work was therefore discontinued in this district.

I am quite satisfied, however, from the experience which has been gained in the enforcement of this order in Saskatoon that its enforcement will be of material benefit to any community, and will also, if taken advantage of in a general way, prove of value in the eradication of bovine tuberculosis.

The reduction in the number of reactors discovered during this year, compared with those found during the previous one, undoubtedly supports this view. There were approximately 160 reacting cattle out of 2,937 tests during 1915-16, and 39 out of 2,612 tests during the last fiscal period.

The total amount of compensation paid in 1915-16 was $3,144.57, and last year $541.65. The owners, however, realized, in addition, $928.24 in salvage for the carcasses, which were passed during the last year and $3,824 during the previous year.

As many municipalities were unable to observe certain requirements, I am, upon the advice of Dr. Torrance, considering asking Council to amend the order in such a way as to make it more practicable. It is my intention to have this order apply to any municipality, provided it is able to employ a paid sanitary inspector for its satisfactory enforcement, instead of limiting it to municipalities of not less than 5,000 inhabitants.

It is also my intention to have the dairies classified as raw-milk dairies and pasteurized-milk dairies. In the former case it will be compulsory for all cattle to be tested with tuberculin, and in the latter case the test will not be enforced, but the milk will be scientifically pasteurized under proper supervision.

HOG CHOLERA.

A compulsory slaughter and compensation policy has been followed in dealing with this disease for many years, with satisfactory results. There has been a material reduction in the number of outbreaks of this disease during the last year. It has only been prevalent in the provinces of Ontario and Quebec; only a few small outbreaks having occurred in British Columbia, Alberta, and Nova Scotia; in Manitoba one isolated outbreak was dealt with, and in Saskatchewan the disease has not been observed.

It is a difficult matter to trace the origin of these outbreaks, but from the facts which have been ascertained there is no doubt that the infection is maintained in this country very largely through the feeding of scraps of United States pork.

The occurrence of the Manitoba outbreaks was of interest in that it occurred on premises where the hogs are being fed on garbage, and at a time when the garbage was being fed in a raw state.

Special measures were put into force a few years ago, with a view to controlling the feeding of garbage to hogs. A policy of insisting upon garbage feeders being licensed has been followed, and in all cases where these licenses are issued the owners must have proper facilities for cooking the garbage, and must also have suitable accommodation for the number of hogs fed, which must be kept in a sanitary condition.

Although this material is not considered to be a suitable food for hogs, owing to the fact that by the time it is fed it is frequently in a sour and fermented state, it is nevertheless questionable whether or not it would be practicable or desirable to absolutely prohibit its use for food purposes. The department is therefore taking reasonable measures in restricting its use and endeavouring to educate the hog owner to feed this material in a fresh but thoroughly cooked state, and also in the keeping of his premises in a clean and sanitary state.

The inauguration, two years ago, of the system of inspecting and licensing premises where hogs are fed on garbage, together with the enforcement of the regulations with regard to the proper cooking of this material, has no doubt been an important factor in preventing outbreaks of hog cholera.

Although the department still slaughters all hogs showing evidences of being affected with this disease, it does not in all cases follow the old policy of slaughtering all contact hogs which do not show symptoms of illness. The procedure started last year has been followed again this year, with satisfactory results.

Contact hogs giving normal temperatures are injected with hog cholera serum. The premises on which they are kept are strictly quarantined and disinfected, and the owner is allowed to fatten the serum-treated hogs for the block.

In view of the danger of disseminating the hog cholera virus from plants where manufactured, these products are not permitted to be made in this country. The serum used by the department is procured from a reliable firm in the United States, and is used only by the officers of this branch.

The importation of hogs from the United States into this country is also prohibited, unless an affidavit accompanies each shipment, stating that the hogs comprising the shipment have not been immunized against this disease.

The United States authorities have suspected for years that the use of hog cholera virus as an immunizing agent has, through carelessness, caused very many outbreaks of hog cholera throughout that country. This department, therefore, considered it wise to restrict the use of serum to its own officials.

It has been estimated that a material saving has resulted to the department, as well as to the hog owners, through the use of this serum. The department has treated with serum approximately 8,500 hogs. Under the old system the majority of these hogs would have been slaughtered as contacts, and an approximate compensation, amounting to $57,000, paid therefor. These hogs, however, have been treated, fed and slaughtered for pork.

The cost of the treatment of these hogs amounted to $1,600. The saving to the department alone has, therefore, been approximately $55,400. In addition to this saving the farmer realized the market value for his pork, as the treated hogs were, with very few exceptions, free from disease, and were therefore utilized as a food product instead of being wasted.

During the past fiscal year, 4,623 hogs have been slaughtered for this disease and $30,449.32 compensation paid therefor.

FOXES.

Owing to the great value of the fox industry on Prince Edward Island, I have thought it advisable to continue quarantining all foxes landed on this island until it can be ascertained positively that they are free from disease. These animals are quarantined at Charlottetown for thirty days on a site provided by the provincial authorities, where they are examined and kept under the supervision of a veterinary officer.

Thirty-five (35) imported foxes were quarantined during the last fiscal period, all of which were found to be healthy.

LABORATORIES.

The work in the laboratories at Ottawa, Lethbridge, Alta., and Agassiz, B.C., has been of very great value to the livestock interests throughout the country. The many biological products manufactured at Ottawa for diagnostic and immunizing purposes have been of inestimable value in eradicating and controlling outbreaks of contagious disease.

There have also been many thousand specimens examined microscopically at these laboratories for the purpose of ascertaining the cause of fatalities.

In view of the importance of ascertaining facts with regard to contagious abortion, and of determining some practical method for the control and eradication of this disease, one of the pathologists at the Ottawa laboratory is devoting his attention specially to it. An immunizing vaccine has already been made, but our work in connection with it has not advanced sufficiently to attempt its general use. I am in hopes, however, that the vaccine may eventually prove to be the agent needed for the eradication of this very serious malady. Another of the pathologists at this laboratory is devoting his whole time to investigating the diseases of poultry.

The work in the laboratories in the West consists principally of the investigation of diseases peculiar to the provinces in which the laboratories are maintained.

A great deal of the time of the pathologists at the Lethbridge laboratory is devoted to the examination of blood taken from suspected cases of dourine and forwarded by the officers in the field.

The pathologist at Agassiz is engaged in investigating the life-history of certain parasites, with a view to determining to what extent they may carry infection of contagious diseases. He has also undertaken some interesting experimental work with regard to fern poisoning, and has definitely determined that a species of fern growing in certain localities in British Columbia actually contains an alkaloid, which is poisonous to horses.

In addition to those lines the pathologists at these laboratories examine, microscopically, specimens of diseased tissues forwarded from the abattoirs under federal inspection, with a view to deciding what official action should be taken in doubtful cases.

Systematic measures are taken for the constant disinfection of stock cars, chutes, and yards, as there is probably no other more certain means of disseminating the infection of contagious diseases than by permitting the use of unsanitary cars, chutes, or yards. There are approximately twenty-five (25) inspectors, who devote all of their time to this work; with the exception of four travelling inspectors they are located at suitable points where cleaning and disinfecting facilities exist.

In order to ensure that all cars are regularly disinfected, an order is in force which provides that all empty stock cars arriving at or passing through any of the places mentioned below, shall, unless bearing evidence of having previously been so treated, be cleansed and disinfected under the supervision of an inspector before being allowed to proceed:—Halifax, N.S.; St. John, N.B.; Montreal, Point Levis, Quebec, Que.; Chatham, Toronto, Ont.; Winnipeg, St. Boniface, Man.; Moosejaw, Sask.; Medicine Hat, Lethbridge, Calgary, Edmonton and Strathcona, Alta.; Cranbrook, Kamloops, Nelson, Port Mann, Revelstoke and Vancouver, B.C.

In order that this work shall be effective, it is very essential to ascertain the true disinfecting properties of materials used. The railway companies are required to forward to the laboratory here samples of disinfectants which they intend to purchase for the disinfection of their cars and yards. These samples are carefuly examined by the pathologist and their phenol coefficient definitely ascertained. If they are found to be satisfactory the railway companies are promptly notified and the use of the disinfectant allowed; if not satisfactory, the department does not, under any circumstances, permit the preparation to be used.

QUARANTINES.

The quarantine stations on the Atlantic and Pacific seaboards, as well as along the international boundary, are being maintained in a good sanitary and serviceable state, as it is most important that animals presented for entry can be safely detained and kept under official supervision in comfortable quarters.

Special measures have been taken to make the Levis quarantine station modern in every respect. This is the largest and most important of our quarantine stations, and the one through which the most valuable importations from overseas enter. The buildings have been erected on the site which was purchased a few years ago, and are located in such a manner as to permit each individual shipment to be kept quite separate while in the stables and also while out at pasture.

It was found advisable to change the inspection port at Bridesville, B.C., to a quarantine station, and to establish inspection ports at Sprague, Man., and Centreville, N.B. The latter point was made an inspection port in place of Florenceville, owing to the fact that it was closer to the international boundary and in a more suitable position.

Meat and Canned Foods Division.

The work of this division continues to increase, and its growth has been especially marked during the past year. This at first sight might appear to be a somewhat strange statement in view of the many reports of the shortage of meat-producing animals. The statistics, however, show that there were slaughtered at establishments operating under the Meat and Canned Foods Act, approximately 648,859 cattle, 2,245,515 swine, and 416,575 sheep. With the slaughter must also be considered the extraordinary imports made by the managements of the inspected plants. These amounted in port alone to 1,032,719 carcasses, besides cuts of pork which in weight would equal another 200,000 carcasses.

The tremendous demands for meat foods to feed the armies of the Allies has drawn very heavily upon the supply in Canada; in fact, to carry out their contracts, Canadian packers were compelled, as above stated, to draw on the United States for nearly one-third of the pork handled.

The prices paid to farmers have been the highest on record, and while the prices of grain and feedstuffs have been high there appears to have been a reasonable margin of profit left to the feeder. I trust, therefore, that the producers of Canada, upon whom so much depends at this time, will redouble their efforts in order that a steady supply of meat foods may be available both for export and home consumption.

Time and space will not permit me to explain in detail the work carried on under the Act, which applies only to establishments engaged in export trade (either foreign or interprovincial) in meats or meat food products, fish, fruit or vegetables.

The inspection of meats and their products is most rigid and thorough, and the work is performed by two classes of inspectors, veterinary and lay.

The veterinary inspectors must first be graduates of a recognized veterinary college, and must pass a further examination prescribed by the Act before they can be appointed. They serve a probationary period during which they are instructed

regarding their duties, and their work is supervised by one of our older officers. If at the end of this time they have shown their fitness for the position, they become attached to the staff; if not, their services are dispensed with.

The veterinarians' duties begin with the arrival of the animals at the plant, when a careful examination is made and those showing suspicious symptoms are separated, tagged, and slaughtered at some specified time when they are given special examination. All animals at the time of slaughter are very carefully examined, and those showing disease or abnormal conditions are dealt with as required by the regulations or as the judgment of the inspector demands.

The lay inspectors also are required to pass a qualifying examination and to serve a probationary period before they become permanent employees. Their duties are confined to the maintenance of the general sanitary conditions of the plant, the equipment, the handling of the products, and also the marking of shipments leaving the establishment.

Edible meats or meat food products which leave an establishment under inspection must be marked with the inspection legend, which consists of the words "Canada Approved," the crown and the establishment number. Indelible products must be plainly and distinctly marked "Indelible, unfit for food." Every operation in these establishments is under the direct supervision and control of my officers during the whole time that work is being done.

There are at present thirty-nine establishments under inspection, at which one hundred and twenty-seven veterinary and sixty-seven lay inspectors are stationed.

FRUIT AND VEGETABLES.

The inspection carried on in connection with establishments engaged in the manufacture of canned, preserved, and evaporated fruits and vegetables is confined principally to sanitary conditions. My officers visit at such times as it is deemed necessary and advisable, examine closely the entire plant, leave a written statement as to the conditions found, and issue instructions as to needed improvements. A reasonable time is given to comply with their demands. If these are not met the plants are forbidden to operate. Careful examination is also made of all raw as well as of all finished products, and any that are found unwholesome or unfit for food are destroyed. As, however, they are not during the whole time of preparation under our supervision, no special mark is authorized to be placed upon fruit or vegetable products to show that they have been manufactured under the provisions of the Act.

During the past four years samples have been taken of every fruit and vegetable canned in Canada. These have been very carefully examined, and much valuable information secured which has been recorded and which will assist materially in the promulgation of standards of quality, a matter at the present time receiving very serious consideration. Such standards, if indicated upon the label, would enable the purchaser to be reasonably sure of the quality of the contents of the tin.

The very unfavourable weather during the past season reduced the pack to such an extent that extremely high prices prevailed.

CONDENSED AND EVAPORATED MILK.

This industry is growing rapidly, and has given us very little trouble. Nearly all the plants are models of construction and sanitation.

During the year sediment tests have been made from the milk furnished by each individual supplying the plants. These tests show the condition of the raw milk in nearly all cases to be very satisfactory.

From present indications my officers engaged in this work under the Act will have an extremely busy year, as the demand for the class of foods coming under their supervision is enormous.

FRUIT BRANCH.

The commissioner spent some time in the early part of the summer visiting the various fruit-producing districts of Canada, in order to keep in touch with conditions and with the marketing methods adopted in each section. A visit was also made to the state of Washington in order to form some estimate of the probable crop there, as the fruit from this state, together with that from other western states, seriously competes with Canadian apples in many of our markets.

Special efforts were made to bring producers in closer touch with the wholesale trade, and to create a spirit of co-operation that would result in more satisfactory methods of marketing.

The co-operation of the various railroads operating in Canada was obtained to give some publicity to Canadian fruit in their dining cars and hotels, and doubtless home consumption was increased by that means. No extensive advertising campaign was carried on.

THE FRUIT SEASON.

The apple season of 1916 was one of the most unfavourable in the history of the industry. The spring was very wet in all sections of the Dominion except the Maritime Provinces, and growers were unable to get on to the land for spraying, cultivating, etc. In many instances, orchards did not receive proper attention, and the development of apple scab was consequently very serious and rapid.

In Ontario, the apple crop was so poor in quality that less than 10 per cent was graded No. 1, and the total crop was only about 75 per cent of that harvested the previous year. In fact, the crop was undoubtedly the lightest and poorest in quality produced in many years.

The Nova Scotia crop was about 680 barrels, or slightly more than that harvested in 1915, and of very good quality. Of the total crop, 415,000 barrels were exported, 200,000 barrels marketed in Canada, and 65,000 barrels used in evaporators and canning factories, etc.

In British Columbia the crop was slightly more than the previous year but there was a smaller percentage of No. 1 grade. The province exported to Australia and New Zealand, 70,000 boxes of apples, as compared with 31,000 boxes in 1913, 41,000 in 1914, and 55,000 in 1915.

Peaches were about 75 per cent of a normal crop in Ontario, and practically a full crop in British Columbia. Plums and pears were a light crop in all sections, except in parts of British Columbia, where the pear crop was about 25 per cent larger than in 1915.

Grapes were less than a normal crop.

FRUIT CROP REPORTS.

As in 1915, monthly fruit crop reports were published on the first of each month from June to October, inclusive. These reports dealt with all varieties of fruit in every section of Canada and in many parts of the United States as well.

The publication of telegraphic reports was also continued. Every effort was made to secure information by telegram from reliable authorities in the producing districts of Canada and the United States, and from our fruit inspectors in the large markets. Cables were also received twice a week from Mr. J. Forsyth Smith, Canadian Fruit Trade Commissioner, giving the sale price of all varieties of Canadian and American apples in Great Britain.

These telegraphic reports were published twice weekly from August 15 to April 15. They have proven to be a valuable source of information to the public, and our mailing list is rapidly increasing as their value becomes known.

INSPECTION WORK.

For the purposes of inspection under part IX of the Inspection and Sale Act, the country was divided in 1912 into five districts, with a chief inspector in charge of each. This system has proved satisfactory and has been continued from year to year. The districts are:—

1. Maritime Provinces,
2. Eastern Ontario and Quebec,
3. Western Ontario,
4. Manitoba, Saskatchewan and Alberta,
5. British Columbia,

In district 1 the number of inspectors was the same as last season, that is two permanent and fourteen temporary inspectors. All these men with the exception of one permanent inspector for New Brunswick and two temporary men detailed for duty on the docks at Halifax, were located in the producing district of Nova Scotia. The system of inspection at point of shipment, inaugurated in the Annapolis valley in 1914, has been continued and has been heartily endorsed by all the leading growers and dealers of the province. Nova Scotia had a crop somewhat below the average of the past seven or eight years, but of fair quality and our inspectors, moving about the packing houses, were able to do much to raise the standard of the packing and grading, and the fruit exported from Nova Scotia during the season was honestly packed and brought high prices on the British markets.

In Quebec, while the crop as a whole was of poor quality, many well-cared-for orchards gave crops not excelled in any other part of the Dominion. Although commercial fruit growing has not of late years received the same attention here that it has in other sections of Canada, varieties of the McIntosh and Fameuse type are produced to a high state of perfection and there appear to be signs of a revival of interest in orcharding just at present. During the past season, therefore, when the exports from Montreal were exceedingly light, only some 68,000 barrels being shipped from that port, it was possible to locate our inspectors in the growing districts, where they were able to do excellent work, not only by assisting the growers towards a higher standard of grading and packing, but by enthusing them to give the proper attention to their orchards.

In eastern Ontario, as everywhere in this province, the apple crop was short and of exceedingly poor quality except in the few commercial orchards that had received particularly good care. Both here and in western Ontario the value of inspection at point of shipment was clearly demonstrated. With a short crop of poor quality, making the output of high-class fruit low and prices correspondingly high, the temptation was great to run as much fruit as possible into the No. 1 and No. 2 grades, notwithstanding the standards laid down in the Inspection and Sale Act. The constant presence of our inspectors, in the orchards and packing houses, where they were able to give practical demonstrations of the proper methods of grading and packing, had such a restraining influence that the growers and shippers, instead of lowering the quality of the higher grades, packed an unusually high percentage of the crop in the No. 3 grade, thus keeping the No. 1 and No. 2 fruit remarkably true to grade.

In pursuance of the policy of inspection at point of shipment, three of the temporary inspectors, who in former years were stationed in the marketing centres in the Prairie Provinces, were this year detailed for work in the producing districts of Ontario. In district 4 (the Prairie Provinces) there were, consequently, only eight inspectors, where last season we had eleven. I feel confident though that the additional work done in the producing districts more than offset the fact that somewhat fewer inspections were made in the marketing centres of the West. The inspection on the prairies is largely a matter of checking up the work done at the shipping points, and of catching lots which it has been impossible for the district inspector to examine. The inspection of imported fruit is also an important feature of the work here, as large quantities of American fruit compete in these markets with our domestic fruit. In the western markets too, our inspectors are able to be of considerable assistance to the growers and shippers in sending exact reports of the condition in which their fruit reaches its destination. In fact, our inspectors' reports have often been the means of effecting an amicable settlement of disputes between buyers and sellers which, in many cases, are caused merely by the misunderstanding that so often arises when business is carried on by persons more than a thousand miles apart, and having no personal knowledge of each other.

In district 5 (British Columbia) the staff consisted during the past year of two permanent and five temporary inspectors, and the inspection work proceeded along much the same as in Eastern Canada. The temporary inspectors, appointed for the active fruit season, being experienced fruit men, have been able to give practical

assistance in the grading, packing and loading of fruit. This has been particularly valuable during the past couple of years when the fruit-growing districts of the province have been practically denuded of all men of military age who before the war devoted their attention to the production of fruit. In many cases, women have been left alone to harvest the crop, and the inspectors of this department have esteemed it a privilege to assist in this work wherever possible.

The systematic inspection of basket factories, commenced during the season of 1915, was continued during 1916. Owing largely to the representations made to the makers by the inspectors of this department, the quality of the packages has been much improved, and very few complaints were received from growers as to the strength and size of packages supplied to them during the past year.

A complete list of the number of inspections made, the number of packages examined, etc., is hereto appended. It will be noted that in these figures the number of packages of small fruit examined in the season 1916-17 is very much less than the corresponding figures in previous years. This is due to the fact that, up to this year, these figures were given in quarts, whereas this year, and in future years, it is our intention to publish them in packages, without reducing the contents of each package to quarts.

PROSECUTIONS.

Violation of the Inspection and Sale Act, part IX, with respect to the false packing and marking of fruit, have been fewer this season than for many years. This was due, in part, no doubt, to the light crop, which gave our inspectors a chance to keep in touch with a much larger percentage of the shipments than usual, but credit must also be given to the system of inspection at point of shipment which has been adopted the last couple of years, the full value of which is just being felt. The educational effect of having the inspectors located at the producing points, so that they have been constantly in touch with the shippers in their orchards and packing houses, has been very marked.

The campaign commenced in 1915, to give adequate inspection to basket fruit, was continued during the past season, and the good result of the work done by our staff of inspectors in the soft fruit district was very apparent. Prosecutions in regard to the over-facing of packages—that is the placing of fine, large, highly coloured specimens on the top layer of a basket, while underneath the fruit was immature, off colour, and small—were only twelve in 1916, in comparison with twenty-one in 1915; and complaints of the under-filling of baskets and berry boxes, which had been common in the past, have almost entirely ceased. The trade recognizes that this is the result of the constant vigilance of our inspectors at the shipping points.

In 1915, too, a vigorous campaign was carried on with respect to imported fruit to see that it was packed and marked in accordance with the requirements of the Inspection and Sale Act. The effect of that campaign and of the twenty-five convictions secured against importers who continued, after warning, to neglect to mark their fruit in conformance with the law, was such that this season there has been practically no complaint in regard to imported fruit, only two convictions being recorded for the whole season.

INSPECTION STATISTICS.

The following table gives comparative statements of the number of lots inspected and the number of packages inspected for the seasons 1912-13 to 1916-17, inclusive:—

Variety.		Number of lots inspected.	Number of packages in lots inspected.	Number of packages inspected.
1912-13.				
Apples	Brls.	18,457	1,321,440	80,102
"	Boxes.	2,101	204,971	33,578
"	Baskets.	119	16,249	2,719
Crab apples	Boxes.	62	12,186	695
" "	Baskets.	17	1,395	660
Pears	Boxes.	272	36,356	2,202
Peaches	"	65	25,592	1,557
"	Baskets.	121	18,837	2,139
Plums	"	186	67,751	7,254
Tomatoes	"	264	39,174	6,949
Small fruits	Quarts.	1,187	2,264,559	172,945
Total				310,791
1913-14.				
Apples	Brls.	11,725	799,510	59,643
"	Boxes.	2,631	341,679	29,879
"	Baskets.	105	11,908	1,219
Crab apples	Boxes.	192	13,250	1,462
Pears	"	977	48,274	8,559
Peaches	"	806	35,494	12,657
"	Baskets.	353	60,771	7,564
Plums	"	679	132,159	15,200
Tomatoes	"	173	59,707	7,305
Small fruits	Quarts.	736	1,128,907	95,841
Total				239,329
1914-15.				
Apples	Brls.	8·926	765,445	59,602
"	Boxes.	2,769	457,055	36,118
"	Baskets.	191	29,476	3,994
Crab apples	Boxes.	38	2,443	951
Pears	"	894	91,121	9,760
Peaches	"	735	183,952	10,035
"	Baskets.	147	17,797	2,422
Plums	"	643	180,154	12,294
Tomatoes	"	305	103,742	12,171
Small fruits	Quarts.	1,162	1,529,598	151,599
Grapes	Baskets.	244	308,728	22,394
Total				321,300
1915-16.				
Apples	Brls.	8,882	710,858	60,248
"	Boxes.	4,297	758,337	46,791
"	Baskets.	204	14,319	1,797
Pears	Boxes.	1,062	121,414	8,816
Peaches	"	1,022	270,508	12,575
"	Baskets.	838	106,569	10,796
Plums	"	998	482,416	22,231
Tomatoes	"	633	200,343	7,926
Small fruits	Quarts.	1,724	2,670,984	275,234
Grapes	Baskets.	260	382,332	11,395
Total				457,809

INSPECTION STATISTICS.—*Continued.*

Variety.	Number of lots inspected.	Number of packages in lots inspected.	Number of packages inspected.
1916-17.			
Apples ... Brls	6,412	404,597	43,359
" ... Boxes	2,337	679,148	32,420
" ... Baskets	188	14,472	1,332
Pears ... Boxes	200	108,426	6,108
Peaches ... "	1,179	289,560	15,612
Plums ... Baskets	609	158,133	7,215
Tomatoes ... "	624	136,993	5,812
Small fruits ... Packages	2,039	282,365	99,799
Grapes ... Baskets	193	273,435	7,951
Total ...	...	...	219,608

MOVEMENT OF APPLES.

During the season (1916-17), 415,908 barrels and 2,703 boxes of Canadian apples were exported from Halifax, and 45,588 barrels and 67,725 boxes from Montreal. The Prairie Provinces received, up to the end of December, 1,076 cars of British Columba apples, 616 cars of Ontario apples, 644 cars of imported apples, and 63 cars of Nova Scotian apples, a total of 2,399 cars. Between January 1 and March 31, 1917, 130 cars of apples were received in Winnipeg.

MEETINGS.

In addition to their other duties, the fruit inspectors have assisted at numerous meetings during the year in various parts of the Dominion, and in many cases have acted as judges of fruit at local fairs and exhibitions. Members of the staff have also been invited to attend and address meetings of fruit growers in the states of New Hampshire, Virginia, and New York.

The packing expert of the department has done good work during the year, having conducted short courses in packing in Ontario, Nova Scotia, and New Brunswick. The box-packing end of his work is particularly important at the present time, inasmuch as our eastern growers have not been accustomed to putting their apples up in boxes, and yet of late years the box has been growing in favour with the consuming public, and if our growers do not have an opportunity of becoming expert in this work, there is a grave danger of the market being captured by imported fruit. In British Columbia, while the art of box packing is thoroughly understood by the experienced packers, much good work has been done by our inspectors in teaching the young, inexperienced packers who have, to a great extent, had to look after this work since the beginning of the war. In addition to the general work along this line carried on throughout the active fruit season, during the past winter one of our permanent inspectors, an expert box packer, has conducted special packing courses at various points throughout British Columbia, all the arrangements for these courses being made by the Provincial Department of Agriculture.

PRICES.

Owing to the shortness of the fruit crop, the prices received by the growers were generally higher than those of 1915. Strawberries and raspberries showed an advance of perhaps 15 per cent. The scarcity of labour, however, seriously interfered with the picking of these crops, and in some parts of Ontario considerable quantities of raspberries and currants were not harvested. Peaches, plums, and cherries were in good demand. The average wholesale price of peaches and plums on the Toronto and Montreal markets were:—

Peaches, 45 cents and 35 cents per 11 and 6-quart basket
Plums 45 cents and 30 cent " " "

In spite of the information sent out from this department, through our crop and market reports, fruit growers did not realize the shortness of the apple crop, and, while prices for the ordinary commercial varieties averaged to the grower about $3.50 for No. 1's, $3 for No. 2's, and $2 for No. 3's, f.o.b. shipping point, it was found that when these were collected by the various dealers, the supply was much shorter than had been anticipated, with the result that the dealers forced the price up to the retail merchants, and prices ranged from $5 to $8 per barrel for No. 1 grade, according to variety, the higher figures being for McIntosh, Fameuse, and Spy. The chief factor, however, in the high price of apples to the Canadian consumer was the tremendous demand for this fruit in Great Britain. The apple crop of England was practically a failure, and there was keen competition for Canadian shipments on arrival in those markets. The highest prices we have ever known on a commercial scale were realized, the highest paid being for some Virginia Albemarle Pippins which sold at from $17 to $19 per barrel, and the average on the British markets for No. 1 barreled stock of the followng Canadian standard varieties being as follows:—

Nova Scotia Fruit.

King	$7 50	Golden Russet	$9 25
Blenheim	6 50	Stark	6 50
Ribston	6 25	Northern Spy	7 75
Greening	6 50	Ben Davis	8 00
Baldwin	7 00		

Ontario Fruit.

Wealthy	$ 9 50	Snow	$11 00
Alexander	7 00	Baldwin	9 50
McIntosh Red	11 00	Ben Davis	8 25
King	10 25	Golden Russet	9 25
Greening	9 00	Stark	9 00
Cranberry	9 50	Northern Spy	8 75

NOTE.—The Nova Scotian barrel is slightly smaller than the Ontario barrel.

The natural result of these high prices was that practically all the fruit that was available, and for which space could be secured, went forward, resulting in a serious shortage of good fruit in Canada and very high prices being demanded for all that was offered for sale.

APPLE EMBARGO.

On February 24, 1917, a proclamation was issued in Great Britain prohibiting the importation of fruit into Great Britain, except under license. Representations were made to the British Government on behalf of the fruit interests of this country

and the dealers of Great Britain, with the result that the embargo was raised, until the 31st of July, 1917, to allow the fruit of the Dominions to enter the United Kingdom to the extent of 50 per cent of the imports of 1916. After July 31 the prohibition becomes absolute, unless the conditions necessitating the embargo have changed. The lifting of the embargo was a great relief to many Canadian shippers, who had held apples for shipment to the markets of Great Britain and who would consequently have suffered great loss had they been obliged to divert the fruit to other markets. The Canadian apples were also eagerly sought by the consumers of the United Kingdom.

ENTOMOLOGICAL BRANCH.

The work of this branch has comprised the administration of the Insects and Pests regulations of the Destructive Insect and Pest Act; the suppression of the brown-tail moth in Nova Scotia and New Brunswick and the introduction of its parasitic and predacious insect enemies and those of the gypsy moth into Eastern Canada; the conducting of investigations upon insects affecting farm, garden and orchard crops, forest and shade trees, domestic and other animals, household and public health, mills and stored products, and the giving of advice concerning the control of such insects; the naming of collections of insects for institutions and individuals; and the administration of an appropriation for the care of the orchards in the Indian reservations in British Columbia. In addition, the Dominion Entomologist has been called upon to advise on questions relating to the protection and encouragement of birds and on the conservation of wild life generally.

Under the Destructive Insect and Pest Act, nursery stock originating in countries in which the San José scale occurs was fumigated at our various fumigation stations. In addition nursery stock originating in Europe, Japan and the New England States was inspected either at the ports of entry for nursery stock or on the premises of the importers for the gypsy and brown-tail moths and other foreign insect pests that such imported trees and plants are likely to introduce into the country. Owing to the continued disturbed conditions in Europe, particularly in Belgium, Holland, and France, from which the greater part of the foreign nursery stock is imported, a continued decrease in the amount of nursery stock occurred; but in spite of all these changed conditions and the difficulties experienced in securing ocean transportation, it was possible to obtain a fairly large quantity of these foreign supplies upon which our nurserymen and florists are to a large extent dependent.

The brown-tail moth situation in Nova Scotia and New Brunswick can still be regarded as being in a satisfactory condition owing to the careful scouting and destruction of the winter-webs of the insects in these two provinces. In Nova Scotia, 14,755 winter-webs were collected during the winter of 1915-16, as compared with 18,154 winter-webs collected during the winter 1914-15, and in New Brunswick, where the infested territory is more extensive, 395 winter-webs were collected in 1915-16, as compared with 239 winter-webs collected during the previous season of 1914-15. Every effort is being made to prevent this dangerous insect pest of our fruit and shade trees from firmly establishing itself in New Brunswick, and from increasing in serious numbers and spreading in Nova Scotia. I am pleased to have the opportunity of

acknowledging the continued co-operation of the provincial governments, who employ half the number of men engaged on this work under the direction of my officers.

We are fortunately still able to record the fact that the gipsy moth, whose depredations are more serious in their effect than those of brown-tail moth, has not yet reached Canadian territory, although its arrival on account of its northeasterly spread in Maine may be expected any year, especially as it has now been demonstrated that the young caterpillars of the gipsy moth can be carried many miles by the prevailing winds.

With a view to being more prepared for the arrival of the gipsy moth, which is only a matter of time, and to assist in securing the natural control of the brown-tail moth, we have continued to import the natural parasitic and predacious enemies of these pests from the New England states, which work has been rendered possible through the continued co-operation of the United States Department of Agriculture, which is gratefully acknowledged. The parasitic and predacious insects were collected by my officers in Massachusetts, and the parasites were reared at the gipsy moth laboratory, Melrose Highlands, Mass., where we were afforded laboratory facilities: From this point these useful insects were shipped to our Entomologist Laboratory at Fredericton, and a distribution of the insects made from the laboratory to various strategical points in the provinces of Nova Scotia, New Brunswick, Quebec, and Ontario. Up to date nearly 100,000 parasites and 4,200 predacious beetles have been imported and liberated.

The investigation of insect pests and their control is now mainly carried on at the entomological field laboratories that have been established throughout Canada during the last five years. The following is a brief summary of the various lines of inquiry that have been undertaken during the last year by my officers in charge of these laboratories under the direction of the Dominion Entomologist:—

Annapolis Royal, N.S.—Investigations on the brown-tail moth, the introduction of its parasites and control work. The control of insects affecting orchard crops, including extensive experiments on the comparative value of different insecticides. In this work we have demonstrated the value of arsenate of lime as a substitute for arsenate of lead, both from the point of view of lower cost and superior mixing power. Our experimental and demonstration work in orchard spraying has resulted in a very great increase in the practice of spraying in the province, with a consequent increase in the amount and quality of the fruit.

Fredericton, N.B.—In addition to the control work and investigations on the brown-tail moth in New Brunswick, my officers at this laboratory have had charge of the introduction and establishment of the parasitic and predacious enemies of the brown-tail and gipsy moths. Important investigations on the means by which the natural control of the tent caterpillars, the spruce budworm, and the fall webworm is effected were continued with important results, as comparatively little is known concerning the factors affecting the increase and decrease of these insects that from time to time are responsible for widespread depredations in Canada.

Hemmingford, Que.—Investigations and demonstration work on the control of orchard insects in a region where little attempt is made to control orchard insects were

continued with beneficial results. In addition to educational work, a beginning was made of a study of a control of the wharble fly which is widely prevalent in the dairying sections of this region.

Vineland Ont.—An investigation of the aphids affecting apple, and their control was continued and satisfactory progress was made. In co-operation with the Provincial Entomologist of Ontario the possibility of controlling the apple maggot by means of arsenical sprays was demonstrated. Investigations on insects occuring in greenhouses, and the more important insects affecting bush fruits in the Niagara fruit district were also continued.

Strathroy, Ont.—The investigations on white grub, which are so widely destructive to field crops, was continued. Valuable data were secured.

Treesbank, Man.—The main lines of investigation at this labratory were: the continuation of the study of the local species of white grubs, the life-histories and distribution of the various species of grass stem-maggots and other insects affecting cereals.

Lethbridge, Alta.—The investigations on cutworms, and particularly the army cutworm, were concluded during the early summer and the results of these valuable investigations were published during the year.

Agassiz, B.C., and Royal Oak, B.C.—At the Entomological Laboratory at Agassiz, and also at a temporary laboratory at Royal Oak, investigations on fruit insects were carried on with conspicuous success. At Royal Oak the life-history and control of the newly discovered orchard pest, the pear thrip, were studied, and the methods of control by spraying was demonstrated to the great benefit of the fruit-growers in the infested region. In the Okanagan valley a beginning was made of a study of the codling moth under British Columbia conditions.

Vancouver, B.C.—Further investigations on insects affecting the forest trees of the province were made from this laboratory, and special attention was paid to a serious borer affecting the cedar along the coast. The survey of insects affecting the coniferous forests of the interior of the province was also continued, but the state of the lumbering industry prevented the carrying out of certain lines of control work that otherwise would have been conducted.

It is gratifying to note the increased value of these regional laboratories to the agriculturists whom they are intended to help. The advice and assistance of the officers in charge of the laboratories is in constant demand, and their work is proving to be of great value in rendering timely assistance.

At Ottawa, investigations on white grubs were commenced and experiments on the control of root maggots were continued. A new species of moth was received from Newfoundland, where it was destructive to cabbages. Certain species of greenhouse pests were studied, including the Florida fern caterpillar, which had not been recorded previously in Canada.

The investigations on forest insect depredations in British Columbia have been continued, and more attention was given during the past year to insects affecting the

forests and lumber industry in Eastern Canada. Special attention was paid to the control of borers in logs, which insects cause serious losses annually, and effective methods of preventing these losses were found. The study of several important species of insects destructive to shade trees in Eastern Canada was undertaken, and good progress was made with the result that it is possible to recommend satisfactory methods of control for the locust borer and alder leaf-miner.

By an arrangement with the Department of Militia and Defence, the Dominion Entomologist visited most of the military camps in Canada last summer, for the purpose of lecturing on the control of insects affecting troops, and advising the sanitary officers in the prevention of flies and lice in the camps. This assistance was greatly appreciated. In addition, a special circular on this subject was prepared for distribution to the officers and non-commissioned officers of the Canadian overseas forces. Further progress in the study of the mosquitoes of Western Canada was made.

Numerous other miscellaneous lines of study have been undertaken on insects affecting the household, stored grain, etc.

A large portion of the time of the Dominion Entomologist has been devoted to questions relating to the conservation of our native birds and mammals. It is gratifying to be able to record the successful conclusion of our efforts to scure better and much-needed protection for our migratory insectivorous birds and wild fowl by the ratification in Washington on December 7, 1916, of the International Convention between Great Britain and the United States for the protection of migratory birds in Canada and the United States. The Dominion Entomologist has also been called upon to advise on the protection of mammals and the treatment of noxious species, and is acting as secretary to the interdepartmental Advisory Board on Wild Life Protection which was appointed in December last.

The following publications have been issued from the Entomological Branch during the year:—

The Cabbage Root Maggott and its Control in Canada, with notes on the Imported Onion Maggott and the Seedcorn Maggott. By Arthur Gibson and R. C. Treherne. Bulletin No. 12, 58 pp., 29 figs., 1916.

The Army Cutworm. By E. H. Strickland. Bulletin No. 13, 31 pp., 15 figs., 1916.

Spraying for Insects affecting Apple Orchards in Nova Scotia. By G. E. Sanders and W. H. Brittain, Entomological Circular No. 8, 11 pp., with spray calendar, 1916.

The Suppression of Two Insects affecting Troops. By C. Gordon Hewitt. Special Circular for Canadian Expeditionary Forces, 8 pp., 2 figs., 1916.

In addition to the above publications the officers of the branch have contributed papers embodying the more technical results of their work to *The Canadian Entomologist* and other scientific journals. Articles have also been contributed each month to *The Agricultural Gazette of Canada,* and in a number of cases reprints of these articles were issued.

During the year considerable additions have been made to the National Collection of Insects, which is now in good order and, with certain exceptions, most of the orders

of insects have been arranged and correctly named. In addition to the insects collected by my officers, we have received numerous donations from private collectors, and one of my officers, Mr. Tom Wilson, whose subsequent death I record with regret, gave the large private collection made by himself and Mr. W. H. Bush in British Columbia. The insects collected on the Canadian Arctic Expedition, 1913-16, have now been received, and arrangements are being made for their identification and description.

BRANCH OF THE CANADIAN COMMISSIONER OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE.

NOTES.—On April 4, the opening of the new fiscal year was marked by the re-election, by the Permanent Committee, of Marquis Cappelli to the Presidency of the Institute. He had occupied this office for six years, and his address to the Permanent Committee reviewed briefly the progress that had been made during that time. At the beginning of that period its only organ was a meagre bulletin giving in a very few pages the then imperfect statistics of cereal production. It had now developed so as to be an international review of the statistics of practically all agricultural production and commerce. There was introduced during the same period the "International Review of the Science and Practice of Agriculture" and the "International Review of Agricultural Economics," both published in five different languages. The former is a review of reviews of agriculture, its material being abstracted from 2,500 periodical publications issued in all countries and written in all languages. This work is impossible of accomplishment by any particular individual or any existing institution. The "International Review of Agricultural Economics" served as the basis of the studies of the American Committee which visited Europe in 1913 to study co-operation and agricultural credit, the committee having begun their campaign at Rome by consulting the Institute experts and attending the meetings of the General Assembly then being held. In the same six years, the president continued, there were created the "International Year Book of Agricultural Statistics" and the "International Year Book of Agricultural Legislation," containing for each year the text of the most important agricultural laws in all countries. These results had been brought about by harmonious co-operation between the Permanent Committee and the employees of the staff, to whose efficiency the president paid a tribute. There was a tendency to extend the statistical data to the production and commerce of all agricultural products, and to the information necessary for a thorough appreciation of all the great economic movements such as freights and exchange, which refer directly or indirectly to the trade of these products. There was, moreover, a tendency to extend the Institute's activity to the whole scientific and practical movement connected with plant diseases and pests, to make the Institute the authorized centre and organ of all the agricultural laboratories and institutions in the world.

Later the president took up the same theme and read before the Permanent Committee the address on the International Institute made by the Minister of External Affairs of Australia, in which the latter also reviewed and highly commended the remarkable work accomplished during the past six years.

Financial Situation.—The expenditure for the calendar year 1916 was 870,000 francs, and the cash held in reserve at the end of the year 691,000 francs. It is expected that the arrears of contributions, which are due chiefly by the central European belligerent governments, will be paid up after the war, as those governments have not ceased to derive the usual benefits from the Institute's operation.

Sir Edward Buck, K.C.S.I., representative for India on the Permanent Committee, died at Rome on July 5, 1916. In the early spring he had undertaken to replace Sir James Wilson, the regular representative of Great Britain, India, and the British Dominions, during the latter's temporary absence in London. He was, however, unable to attend the last two meetings which preceded the summer holidays. Sir Edward Buck, formerly a Director of Agriculture for India, possessing high technical qualifications and the rare experience of a long and successful career, was a deeply convinced champion of the International Institute. He was one of the most active and effective workers in connection with the Institute's original organization, and, only a year or so before his death, made a strong appeal to the various British governments to increase their active support of and collaboration with the Institute.

Changes in the Institute Staff.—By reason of a successful competitive examination in October, 1915, Professor Lorenzoni was chosen to occupy the chair of political economy at the University of Macerata, and tendered his resignation as Secretary-General, to take effect from October 31, 1916. He was succeeded by Mr. Dragoni, Instructor General and Chief of the Service in the Italian Ministry of Agriculture, Commerce and Industries, and who had been connected with the settlement of important international questions. At the same time the Acting Secretary-General, Dr. Paul Van Hissenhoven, became free to devote himself exclusively to the statistical branch of the Institute work, of which he is the permanent chief. Dr. Hissenhoven is particularly well qualified for this work in consequence of his previous experience as secretary of the Antwerp Board of Trade and professor at the Antwerp Commercial Institute.

Professor Lorenzoni's retirement caused much regret, inasmuch as he had been connected from the start with the creation of the Institute, and, besides the duties of Secretary-General, filled with exceptional distinction the position of Chief of the Bureau of Economic and Social Institutions. It is unfortunate that his severance from the institute is chiefly the result of the protest of Austria because notwithstanding his being a native of Italia Irrendenta, he served a term at the front in this war in the Italian army.

Ocean Freight Rates.—One of the notable reports of the year was that undertaken by the retiring Secretary-General, Professor Lorenzoni, entitled "Ocean Freight Rates and the Transportation by Sea of Cereals." The first part of the report, presented in November, 1916, was received by the Permanent Committee with the highest commendation, and Professor Lorenzoni was charged by private arrangement to proceed with the completion of part II after his retirement from the Institute to undertake University work. This report, when completed, will serve as the basis for the discussions on this important question at the next General Assembly.

Control of Grasshoppers.—In April, on the initiative of the Government of Morocco, Mr. Louis Dop, Vice-President of the Institute, introduced proposals for the purpose of bringing about international action in the control of grasshoppers and locusts. It was suggested by Mr. Dop that action should be especially directed towards suppressing the pest in its original breeding grounds. He was of the opinion that a permanent concerted campaign carried on by Egypt, Tripoli, Tunis, Algeria, Morocco, and West Africa would either abate or entirely suppress the periodical migration of the acridians. Measures of like nature had been adopted with success in South Africa and in South America. On the latter continent the convention organized in Montevideo, Uruguay, in 1913, had been followed by another congress after a visit had been made by specialists to the supposed original habitat of the acridians in Bolivia. On the proposal of the delegate for Russia that many other world states would be interested in the question, it was decided to consult the adhering Governments on the expediency of holding an International Conference, which might be held, as was the last International Meteorological Conference, just before the meetings of the General Assembly, by which its deliberations might be ratified. An elaborate monograph of 186 pages was prepared by the Bureau of Agricultural Intelligence and Plant Diseases and sent to the various Governments to aid them in coming to a decision.

The Canadian Office.—The "Bulletin of Foreign Agricultural Intelligence," which had been published since October, 1910, was discontinued with the December, 1916, number. This was done to give effect to a recommendation in the report of the Joint Committee of both Houses on the Printing of Parliament.

A section of the "Agricultural Gazette" (Part V) has been allotted in order to replace the Bulletin to some extent, and to continue to make available to Canadians the valuable information published by the Institute at Rome.

Among the more prominent articles published in the "Bulletin of Foreign Agricultural Intelligence" during the year were: "Co-operation in Minnesota," "Co-operative Dairy Societies in Great Britain," "The Value of Birds to Man," "Review of the World's Agricultural Legislation of 1914," "Co-operative Abattoirs in Denmark," "Insurance Conditions in Reference to the Transport of Cereals," "Droughts and Hot Weather," "Entomophagous Insects and their Practical Employment in Agriculture," "The United States Federal Farm Loan Act," "Protection of Orchards against Frost," "Protection of Birds in Canada and the United States," "International Control of Ocean Carriage and Freight Rates," "Meteorology and Agriculture," "Wheat and the War, 1915-16 and 1916-17," and other similar editorial reviews of the world's cereal situation.

A large number of inquiries for more information than was furnished in the summarized articles published in the Bulletin were answered during the year. In many cases the original article and additional information were procured from the author or the Institute.

A limited number of the three original Institute Bulletins, "The International Review of the Science and Practice of Agriculture," "The International Review of Agricultural Economics," and "The International Crop Report and Agricultural Statistics," in French and in English, are received from Rome by the Institute Branch. These are sent to a list of Government officials and experts in different lines

of agriculture. A number of copies are held in reserve at the branch to be sent occasionally to readers of the Foreign Intelligence section of the "Agricultural Gazette," who wish to receive more details of the information therein outlined.

Library of the Institute Branch.—The library records show that there were, on March 31, 3,448 bound books and 27,130 unbound books and pamphlets, irregular serials being included in the latter term. The United States periodical "Agricultural Index," received by the library, covers pretty thoroughly all current agricultural literature of the English-speaking countries. Practically all of the periodicals therein indexed, together with many others received in exchange, in all some 350, are conventiently arranged on the library shelves.

The various card catalogues, about 165,000 in number, published by the United States Department of Agriculture and the Library of Congress, have been kept up to date. These are of great assistance to the experts making use of the library, an effective means of building up the library, and in compiling bibliographies.

While the library primarily serves the purposes of the Institute, it is sought to make it of the utmost assistance to agricultural experts, whether officials of the Federal Government or otherwise. It is of particular importance that an official should, by this means, be able to examine the latest books and publications to enable him to decide upon the acquisition of the ones most suitable for his own special purposes. Hence, lists of the volumes received were from time to time circulated among the various agricultural specialists.

THE PUBLICATIONS BRANCH.

The work of the Publications Branch is continually on the increase. While the number of publications issued by the department was slightly less for the fiscal year of 1916-17 than in 1915-16, or sixty-two compared with sixty-six, the number of copies sent out exceeded that of the previous year by 215,283.

It is noteworthy that since the introduction of the Patriotism and Production and the Production and Thrift movements, the increase both of the mailing lists and of the general demand has been most marked, the total of 1914-15 over 1913-14 being 737,021; of 1915-16 over 1914-15, 1,284,981; and of 1916-17 over 1915-16, 215,283; or an aggregate increase in three years of 2,237,285.

In these circumstances the comparative growth from year to year warrants the assumption that the work will continue to develop in extent. This possesses the appearance of ever-widening appreciation of the efforts of the department to prepare and send forth informatory and advisory literature to farmers, breeders, fruit growers, and to amateurs who follow any one of these pursuits.

The steady increase from year to year of the number of publications sent out on request by mail from all parts of the country is evidence not alone of abiding influence, but also of the growth of intelligent interest in products of the soil by the public in general. This phase of the question is especially illustrated by the demand for publications bearing on the cultivation of home and school gardens. For a pamphlet entitled "The School Garden," 21,600 requests were received, apart from 1,800 dis-

tributed according to mailing list; for another entitled "The Home Vegetable Garden," 15,300 requests were received; and for a third, entitled "The Home Vegetable Garden and Patriotic Garden Competition," 8,100 requests were recorded. For the complete Experimental Farms report altogether 114,360 requests were complied with, and for the divisional reports the total distribution reached 694,400. For "Seasonable Hints," in addition to 802,844 sent out as per mailing list, 14,460 were despatched in response to requests. Of entomological publications, 66,740 were circulated. In all, the requests responded to in 1916-17 numbered 333,767, in addition to 2,972,951 supplied to the regular mailing lists.

A complete statement of circulation for the year follows, and also a statement for the last five years indicating the expansion of the work of the branch:—

CIRCULATED IN 1916-17.

Character of Publications.	Mailing List.	Requests.
Reports	782,690	149,690
Bulletins	366,012	65,060
Seasonable Hints (3 issues)	802,844	14,460
Pamphlets	272,502	64,037
Circulars	386,500	14,360
Leaflets	131,000	
Gazette (12 issues)	71,982	270
Foreign Agricultural Intelligence (9 issues)	149,431	3,620
Agricultural Institute publications, original	8,190	170
War Book	1,800	22,100
Total	2,972,951	333,767

COMPARATIVE STATEMENT FOR FIVE YEARS.

Year.	Names on Lists.	Number of Publications.	Number Mailed.	Increase over Preceding Year.
1912-13	168,292	48	1,450,000	
1913-14	178,000	59	1,069,433	
1914-15	202,000	46	1,806,454	737,021
1915-16	240,000	66	3,091,435	1,284,981
1916-17	306,200	62	3,306,718	215,283
Total in five years			10,724,040	2,237,285

The methods of operation in circulation have been detailed in previous reports, but improvements are still being made from time to time and every effort is put forth to adopt expeditious and labour-saving devices. In common with other branches of the service, the circulation, recording, storing, and despatching divisions of the branch have suffered in the loss of experienced help. Female labour has been substituted to some extent for male labour, and to partially supply the place of seven young men who have joined the overseas force and two others who have secured engagements elsewhere. There are now employed in the branch, including the editorial staff of *The Agricultural*

Gazette, thirty-six people, comprising twenty-five men and eleven women. Of these, twenty are clerks, four messengers, and twelve packers.

During the year *The Agricultural Gazette* has ranged in volume each month from eighty to ninety-six pages, and has contained contributions, varying from one to fifteen from each contributor on different subjects, from 180 officials of the Federal Department of Agriculture or of the agricultural, educational or other departments of the nine provinces of the Dominion, in addition to the writings of the editorial staff. Each month symposia have been given of the subjects more immediately receiving the attention of the various provincial governments. Every effort has been made to make these as complete as possible in order that the whole country might be covered and the activities of each province be known one to the other.

A large amount of work in connection with the revision and growth of the mailing lists was done. During the past fiscal year about 120,000 new stencils were embossed. In the work of revision, 16,150 addresses were changed or cancelled. On the addressing machines, 2,408,700 envelopes were addressed. A total of 435,000 stencils were used.

III. PATENTS OF INVENTION.

The following tables show the transactions of the Patent Office, Department of Agriculture, from April, 1916, to March 31, 1917:—

Applications for patents		8,751
Patents and certificates granted—		
Patents	7,520	
Certificates	1,599	
Total		9,119
Caveats		358
Assignments of Patents		3,661
Notices under section 8		831

Receipts.		Expenditure.	
	$ cts.		$ cts.
Cash received	227,094 09	Salaries	90,850 00
Cash refunded	3,777 39	Patent record	28,916 91
			119,766 91
		Receipts over expenditure	103,549 79
Net cash	223,316 70		223,316 70

DETAILED STATEMENT Patent Office Fees for Year 1916-17.

Month.	Notices.	Patents.	Assignments.	Certified Copies.	Caveats.	Sundries.	Subscription.	Total.
1916.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	174 00	17,905 20	752 90	297 05	190 00	5 00	16 10	19,340 25
May	156 00	19,236 95	784 15	237 35	160 00	29 16	12 80	20,616 41
June	150 00	15,922 80	603 80	230 81	205 00	22 15	52 20	17,186 76
July	126 00	15,212 57	624 50	304 75	189 00	14 45	28 80	16,500 07
August	102 85	14,777 55	609 95	257 55	143 00	14 00	6 95	15,911 85
September	134 00	15,385 69	585 35	221 90	125 00	10 00	7 85	16,469 79
October	130 90	15,998 40	670 10	243 80	165 00	12 40	42 40	17,263 00
November	111 00	16,822 62	573 10	263 85	170 00	12 90	31 20	17,984 67
December	124 00	16,791 90	733 84	171 85	125 00	13 00	38 65	17,998 24
1917.								
January	164 40	22,379 44	804 95	362 67	165 00	20 25	28 69	23,925 40
February	132 00	18,911 00	860 00	248 64	165 00	11 00	13 55	20,341 19
March	157 00	22,001 48	800 28	288 75	213 00	47 65	48 30	23,556 46
	1,662 15	211,345 60	8,402 92	3,128 97	2,015 00	211 96	327 49	227,094 09

The total number of patents granted to Canadian inventors was 1,091, and were distributed among the provinces of the Dominion as follows:—

Ontario	465
Quebec	287
British Columbia	72
Manitoba	84
Alberta	59
Saskatchewan	62
New Brunswick	29
Nova Scotia	29
Prince Edward Island	3
Yukon	1

Patents issued to residents of Canada, with the ratio of population to each patent granted:—

Provinces.	Patents.	One to Every.
Manitoba	84	5,423
Ontario	465	5,426
British Columbia	72	5,451
Alberta	59	6,350
Quebec	287	6,979
Saskatchewan	62	7,942
Yukon	1	8,512
New Brunswick	29	12,134
Nova Scotia	29	16,977
Prince Edward Island	3	31,242

Statement of the number of patents issued under the Act, on which the fees are paid for periods of six, twelve, or eighteen years, at the option of the patentee; and of patents on which the certificates of payments of fees were attached after the issue of patents originally granted for periods of six and twelve years:—

Period for which fees were paid on first issue—	
6 years	7,493
12 "	4
18 "	23
Patents on which Certificates were attached after issue—	
6 years	1,555
12 "	44
Reissues—	
6 years	10
12 "	2
18 "	1

COMPARATIVE STATEMENT of the transactions of the Patent Office from 1907 to 1917, inclusive.

Years.	Applications for Patents.	Patents and Certificates Granted.			Caveats.	Assignments of Patents.	Fees received.
		Patents.	Certificates.	Total.			
							$ cts.
1907	7,077	6,121	634	6,755	285	3,003	169,548 78
1908	7,406	6,774	744	7,518	317	2,900	178,482 49
1909	7,239	6,395	827	7,222	319	3,001	176,692 05
1910	7,789	7,223	1,010	8,233	448	3,147	194,571 54
1911	8,037	7,249	1,002	8,251	406	3,256	200,164 41
1912	8,293	7,399	1,113	8,512	348	3,725	207,762 77
1913	8,681	7,502	1,199	8,701	353	3,741	218,125 02
1914	8,359	7,918	1,323	9,241	354	3,432	215,001 71
1915	7,302	6,867	1,211	8,078	391	3,391	180,028 37
1916	7,793	6,812	1,419	8,231	419	3,311	202,630 40
1917	8,751	7,520	1,599	9,119	358	3,661	227,094 09

NATIONALITY OF INVENTORS.

Countries.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
United States of America	5,021	4,885	4,997	4,964	5,220	4,645	4,972	5,772
Great Britain and Ireland	392	359	506	495	558	450	360	352
*Germany	241	304	336	307	300	107	14	10
Australia	60	77	99	75	76	76	76	62
France	75	97	108	100	115	83	55	45
New Zealand	37	33	46	47	50	29	31	37
Sweden	39	54	52	64	40	40	44	43
Belgium	20	25	20	23	33	19	21	5
Austria	23	20	24	40	35	11	0	0
Italy	8	12	6	16	14	15	8	8
Switzerland	12	26	23	20	22	14	22	10
Denmark	8	5	14	15	16	11	12	18
Transvaal	12	16	10	7	1	3	3	3
Hungary	7	6	6	6	5	5	0	0
Russia	14	18	6	17	13	9	5	6
Norway	18	20	17	10	32	24	29	20
Newfoundland	2	3	1	2	1	1	1	0
Netherlands	0	0	.....	.....	7	4	2	2
Mexico	11	7	10	8	7	4	4	0
Cape Province	0	3	4	4	1	0	0	1
Cuba	1	5	1	1	9	3	0	0
Spain	1	3	.....	.....	1	1	3	0
Chile	0	1	.....	1	0	0	1	0
Finland	0	1	.....	1	0	0	0	0
Portugal	0	0	.....	.....	0	1	0	0
Roumania	0	1	1	.....	0	1	0	0
Grand Duchy of Luxemburg	0	0	.....	.....	0	3	0	0
Algeria	0	1	.....	.....	0	0	0	0
Japan	2	0	2	2	1	3	2	1
India	0	5	3	1	7	3	0	0
Natal	0	0	1	2	0	0	1	0
Nicaragua	0	1	.....	.....	0	0	0	0
Brazil	0	2	1	.....	1	3	0	2
Turkey	0	0	.....	.....	0	0	0	0
Poland	2	0	.....	.....	0	0	0	0
Holland	2	11	8	7	8	5	2	7
Argentine Republic	5	1	1	.....	2	3	5	3
Panama (Canal Zone)	0	0	3	.....	3	0	1	0
Egypt	1	1	.....	.....	1	1	0	1
Southern Rhodesia	1	.....	.....	.....	0	0	2	0
Peru	.....	.....	3	2	0	0	0	1
Hawaii	.....	.....	3	3	0	0	2	4
Venezuela	.....	.....	2	1	1	0	0	0
Trinidad	.....	.....	1	.....	0	0	0	0
Porto Rico	.....	.....	1	2	0	0	0	0
Tunis	.....	.....	.....	1	0	0	0	0
Ceylon	.....	.....	.....	1	0	0	0	0
Straits Settlements	.....	.....	.....	1	0	0	0	3
Philippine Islands	.....	.....	.....	.....	1	1	2	0
Canary Islands	.....	.....	.....	.....	1	0	0	0
Java	.....	.....	.....	.....	1	0	0	0
Channel Islands	.....	.....	.....	.....	1	0	0	2
China	.....	.....	.....	.....	.....	1	0	0
West Indies	.....	.....	.....	.....	.....	1	0	0
Isle of Man	.....	.....	.....	.....	.....	1	0	0
Norfolk Islands (South Pacific)	.....	.....	.....	.....	.....	2	1	0
Alaska	.....	.....	.....	.....	.....	2	1	5
Bermuda	.....	.....	.....	.....	.....	1	2	0
Zululand	.....	.....	.....	.....	.....	0	1	0
Central America	.....	.....	.....	.....	.....	.....	.....	1

*These ten patents were granted during the year to assignees of subjects of the Emperor of Germany; the assignment to citizens of countries not at war with Great Britain having been made previous to the outbreak of hostilities.

The total number of reports issued by the examiners during the year was 13,019 and 13 patents were surrendered and reissued.

Out of the total number of patents granted by this office during the year there were 5,772 issued to inventors or assignees resident in the United States, being 76 per cent of the whole issue. There were more patents granted to citizens of the United States during the last fiscal year than in any previous year of record.

This branch of the department continues to receive the official reports of patents from Great Britain, Australia, New Zealand, United States, Mexico, Portugal, Italy, Belgium, France, and Japan, in addition to other periodicals of a scientific nature, in exchange for the Canadian Patent Office Record.

There were 2,198 patents brought under the conditions of the compulsory license clause, section 44 of the Patent Act.

The number of notices under section 8 of the Patent Act was 831.

Since the declaration of war, the following licenses were granted under the Orders and Regulations respecting Patents of Invention, made under "The War Measures Act, 1914":—

Number of Patent.	Name of Registered Owner.	Short Title.	Name and Address of Licensees.	Date of Grant.
133636	Farbwerke Vorm. Meister Lucius & Bruning assignee of Paul Ehrlich and Alfred Bertheim.	The Manufacture of New Derivatives of the Para-Oxyarylarsinic acids.	Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que.	Nov. 28, 1914.
152320	Farbwerke Vorm. Meister Lucius & Bruning assignee of Paul Ehrlich and Alfred Berthein.	The Manufacture of New Derivatives of the Para-Oxyarylarsiuic acids.	Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que.	
144873	Farbwerke Vorm. Meister Lucius & Bruning assignee of George Korndörfer.	The Manufacture of Derivatives of Dioxydiamino-arseno-benzene.	Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Synthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que.	
144874	Farbwerke Vorm. Meister Lucius & Bruning assignee of George Korndörfer and Baptist Reuter.	The Manufacture of Derivatives of Diamidodioxy-arseno-benzene.	Ernest Neil Macallum and Charles Newton Candee, Jr., trading under the name and style of the Symthetic Drug Company, Toronto, Ont. Gustave Archambault, M.D., Montreal, Que.	
78745	Hülsberg & Co. Gesellschaft mit beschräankter Haftung, assignee of Max Rüping.	Improvements in or relating to the Impregnation of Wood and Other Porous Materials.	Vancouver Creosoting Co., Ltd., Vancouver, B.C.	July 12, 1916.
92353	Hülsberg & Co. Gesellschaft mit beschränkter Haftung, assignee of Max Rüping.	The Impregnation of Wood and other Porous Materials.	Vancouver Creosoting Co., Ltd., Vancouver, B.C.	

IV. COPYRIGHTS, TRADE MARKS, INDUSTRIAL DESIGNS AND TIMBER MARKS.

STATEMENT of Fees received by the Copyright and Trade Mark Branch from April 1, 1916, to March 31, 1917.

Month.	Trade Marks.	Copy-rights.	Designs.	Timber Marks.	Assign-ments.	Copies.	Totals.
1916.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
April	2,792 24	125 54	82 50	19 90	76 00	11 50	3,107 68
May	2,566 05	125 50	128 00	4 25	31 50	58 00	2,013 30
June	2,766 50	115 75	134 50	2 00	71 00	17 50	3,107 25
July	2,289 90	98 00	110 00	4 00	31 00	28 75	2,561 65
August	1,827 00	130 75	131 00	6 00	48 00	35 00	2,177 75
September	2,380 00	109 00	60 00	6 00	36 00	27 00	2,618 70
October	2,892 00	131 60	100 00	6 00	58 00	45 00	3,232 60
November	2,584 82	149 60	135 00	14 00	32 00	53 75	2,969 17
December	2,430 63	164 65	73 80	2 00	27 00	33 25	2,731 33
1917.							
January	3,261 73	128 30	83 50	20 00	125 00	38 10	3,656 63
February	2,636 55	139 70	140 00	26 00	43 00	35 65	3,020 90
March	3,036 50	160 50	391 00	12 00	95 50	36 75	3,732 25
	31,463 92	1,578 89	1,569 30	122 15	674 00	420 25	35,829 21
Refunds	6,944 90	21 00	197 00	2 00	19 50	2 00	7,186 40
	24,519 02	1,557 89	1,372 30	120 15	654 50	418 25	28,642 81

The particulars of the registrations made by the Copyright and Trade Mark Branch of the Department of Agriculture during the year ended March 31, 1917, are as follows:—

I. Copyrights—		
Full copyrights without certificates	1,082	
Full copyrights with certificates	150	
Temporary copyrights without certificates	30	
Temporary copyrights with certificates	....	
Interim copyrights without certificates	112	
Interim copyrights with certificates	10	
Renewals of copyrights	4	
Assignments	53	
		1,441
II. Trade marks		840
Renewals of specific trade marks		74
Assignments of trade marks		249
III. Industrial designs		196
Renewals		38
Assignments		27
IV. Timber marks		55
Assignments		4
Total registrations		2,924
V. Letters received		6,822
VI. Letters sent		7,075

The following table shows a comparative statement of the business of this branch from 1904 to 1916, inclusive:—

Year.	Letters Received.	Letters sent.	Copyrights Registered.	Certificates of Copyright.	Trade Marks Registered.	Industrial Designs Registered.	Timber Marks Registered.	Assignments Registered.	Fees Received Gross.	Fees Received Net.
									$ cts.	$ cts.
1904	2,858	3,293	1,106	228	621	107	25	118	20,647 30	
1905	3,367	3,902	1,130	189	661	139	22	154	23,706 75	
1906	5,340	5,193	1,228	169	1,119	125	47	282	33,107 10	
1907	4,475	4,353	1,140	175	848	182	39	136	30,073 20	
1908	6,647	4,980	1,416	170	892	162	44	343	37,514 00	
1909	6,320	5,750	1,535	171	1,059	143	108	174	38,071 31	
1910	6,411	7,688	1,699	206	1,021	118	39	386	42,153 76	
1911	7,027	7,091	1,593	213	1,212	149	39	230	43,327 86	
1912	9,435	9,322	1,760	205	2,315	228	15	559	51,043 21	43,061 56
1913	8,441	9,220	1,835	207	1,378	165	57	264	49,409 68	41,251 98
1914	2,190	9,292	1,675	193	1,106	224	24	242	39,599 69	32,840 87
1915	6,815	7,446	1,477	146	1,019	215	27	279	35,653 21	29,645 11
1916	6,822	7,075	1,384	160	840	196	55	333	35,829 21	28,642 81

V. PUBLIC HEALTH AND QUARANTINE.

Perhaps the most noted event during the year from the Public Health standpoint has been the epidemic outbreak of infantile paralysis in the United States, and to a much less extent in Canada.

Other infectious diseases have not prevailed to any unusual extent during the year.

At the coast quarantine stations on the Atlantic and Pacific coasts, 168,857 persons have been inspected. In 1914, the last year before the war, the number was 582,697.

The admissions to the quarantine hospitals were 96. In the last year before the war the number was 1,996.

In every instance the disease was stamped out at the station, and so prevented from appearing inland.

From the middle of August until the end of November the production was required of certain prescribed certificates from all children under sixteen years of age desirous of entry into Canada from the states affected with infantile paralysis, over the international boundary between the Dominion and the United States.

Asiatic Cholera.—During the past year this disease has been reported in the following countries: Austria-Hungary, Borneo, Ceylon, China, Egypt, Germany, Greece, India, Indo-China, Japan, Java, Korea, Persia, Philippine Islands, Russia, Siam, Straits Settlements, Turkey in Asia, and Turkey in Europe.

On account of the prevalence of cholera in many localities in the Orient, steerage passengers arriving at the British Columbia quarantine station at William Head were subjected to bacteriological examination and were not admitted to entry until it had been determined by such examinations that they were not cholera carriers. By the 24th of February last the threatening had so far passed that such examinations were suspended. Similar action was taken at the same time at the quarantine stations of the contiguous states on the Pacific.

Bubonic Plague.—This disease has been reported during the year in the following countries: Argentina, Azores, Brazil, Ceylon, Chile, China, Ecuador, Egypt, Great Britain, Greece, Hawaii, India, Indo-China, Japan, Java, Mauritius, Persia, Peru, Russia, Straits Settlements, Siam, Union of South Africa, British East Africa.

In Great Britain eleven cases of human plague have been reported during the year. Three in Bristol, two in Hull with one death, and six in Liverpool with three deaths.

Plague-infected rats have been found in London and in Liverpool during the year. Precautionary measures were taken at our Atlantic ports to prevent the landing of rats from vessels arriving.

Plague-infected rats have also been found during the year in Hong Kong, Shanghai, and Hawaii; and at New Orleans, La., and Seattle, Wash., in the United States. In California, plague continues also amongst the ground squirrels.

In India the following figures give some indication of the ravages of this disease: October 15 to December 23, 1916, cases 89,512, deaths 67,068; December 31, 1916, to January 13, 1917, cases 30,487, deaths 23,538; January 21 to 27, cases 15,872, deaths 12,783.

Smallpox.—This disease has had its usual worldwide prevalence again this year. It has not shown itself at any of my Atlantic stations, owing possibly to the small number of passengers arriving from Europe. It has been brought from the Orient to the British Columbia station by two steamships.

Typhus Fever.—This disease, one of the oldest diseases of which record can be found, was, up to two years ago, an almost forgotten malady, at any rate as an epidemic, though always more or less present in many countries where sanitation is backward, such as the Balkans, Turkey, Persia, Arabia, China, and most of Asia. Now, however, war conditions have spread the disease through Serbia, and disturbed economic conditions in Mexico have disseminated the infection far and wide in that country, where it has always been present in a limited or endemic form.

Yellow Fever.—The results of the application of the steps to prevent and destroy the mosquito host of the yellow fever germ have reduced this disease to a negligible quantity as far as this continent is concerned. Its principal habitat now seems to be the west coast of Africa.

Enteric Fever.—One of the striking things about this war is the triumph of science over this disease. During the Boer war it was stated that one man out of every nine in the British force in South Africa was invalided through this disease. In the Spanish-American war, of 107,000 men in camps, 20,000 contracted the disease. Whilst our own Department of Militia has just announced that during the twelve months ending December 31 last, only 167 cases of typhoid fever occurred amongst the many thousands of men of the Canadian Expeditionary force in Canada.

Leprosy.—There are at present in the lazaretto at Tracadie, N.B., thirteen lepers, six males and seven females. This is the smallest number for very many years, and only about half the number present a few years ago. Ten are of French-Canadian origin, one of Icelandic, one of Russian, and one of Assyrian.

There were two deaths during the year. No admissions. Amelioration of symptoms and sufferings continues to be observed under the treatment now being carried out.

The two former inmates discharged, apparently cured, in 1912, and the two residents seemingly now free from the disease, remain without any indication of its recurrence.

Officers report their high admiration of the continued devotion of the nursing religious sisters in their attendance on the lepers.

At the leper lazaretto at Darcy Island, B.C., five lepers have been admitted during the year. One, a Japanese, was deported; one, a Russian, was, after three months' observation, released under certain conditions of periodic examination, as not being a menace to the public health; the remaining three, being two Chinese and one Chilean-Kanaka, are still under treatment and care.

Beri-beri.—The importance which diet plays in the production, prevention, and treatment of this disease is now generally recognized. When certain substances are lacking, nutrition suffers, and when they are removed disease supervenes. Diseases of this nature have been denominated deficiency diseases, of which one of the most typical would seem to be beri-beri.

Anthrax.—A fatal case of this disease was reported on the 8th instant as occurring at Longwood, in the vicinity of Huddersfield, England, in an employee in a woollen mill at that place. The wool originated mostly in the East Indies. A second case occurred on the 15th instant.

Infantile Paralysis.—In view of the large number of cases of this disease—stated to be 24,000 in all—in the neighbouring States, instructions were issued in August last requiring every person under sixteen years old, desiring to enter Canada over our land frontier, coming from any one of the affected group of states to produce a certificate properly attested, stating that the bearer had not the disease, nor had been in contact with any one who had. This certificate had to be issued not longer than twenty-four hours before departure. This requirement was raised at midnight of November 30 last.

Precautions against rats.—Owing to the reported finding of plague-infected rats at Liverpool, it was thought necessary that steps should be taken to prevent the landing of rats from vessels at the Atlantic ports.

The precautions are:—

The breasting out of the vessel from the pier for not less than six feet.

The placing on every hawser between the vessel and the pier of a funnel or disc of metal, not less than three feet in diameter and not more than three feet from the vessel.

The reduction of the gangways to a minimum by day and their guarding by quartermasters. At night all gangways to be withdrawn, or if one be essential, that it be lighted as well as guarded.

As once a quarantine clearance is given, incoming vessels pass from my jurisdiction to that of the Minister of Marine, that department undertook to instruct its harbourmasters at all Atlantic ports to have these precautions enforced.

Cerebro-spinal Meningitis.—Information was received from the Militia Department this spring that certain soldiers returning to Canada by way of St. John, N.B., were supposed to have been in contact with cases of cerebro-spinal meningitis before embarking at Liverpool. These men were detained at quarantine for special examination by the bacteriologist there. His report was that the cultures were negative in all cases.

Circulars.—Circular letters were issued from time to time to the different officers, drawing their attention to the various matters during the year connected with the appearances and movements of epidemic disease abroad.

Public Health Meetings.—During the year the Director-General of Public Health attended the annual meeting of the Canadian Public Health Association for the Prevention of Tuberculosis at Quebec in September.

Public Works Health Act.—The inspectors report that the year has been exceptionally free from infectious disease amongst the workmen employed in the various works connected with railway construction, canals, and tunnels. They report the medical service as satisfactory, and the sleeping quarters and boarding of the men employed fully equal to the good conditions of previous years.

Changes in the Medical Staff.—At Halifax, N.S., Dr. J. V. Graham has replaced Dr. Blackett as substitute for Dr. V. N. Mackay, overseas. At St. John, N.B., Dr. Heagerty again took winter duty for Dr. Warwick, overseas. At William Head, B.C., the position of assistant medical officer and bacteriologist is at present vacant. At Prince Rupert, B.C., Dr. John Cade is acting as a substitute for Dr. Tremayne, overseas.

The whole respectfully submitted,

MARTIN BURRELL.
Minister of Agriculture.

PUBLIC HEALTH

REPORT OF THE DIRECTOR-GENERAL OF PUBLIC HEALTH.

(F. Montizambert, C.M.G., I.S.O., M.D.Edin., F.R.C.S.E., D.C.L.)

March 31, 1917.

Sir,—I have the honour to submit this my report as Director-General of Public Health for the year ending this day.

At your various coast quarantine stations the number of persons inspected, and of persons admitted to your quarantine hospitals continue to show a marked decrease owing to the enormous falling-off in immigration and passenger travel on account of the war.

The number of vessels inspected continues to show an increase, in part at least due to the withdrawal for war purposes of large vessels and their replacement by more numerous smaller ones.

Along a considerable portion of your frontier international quarantine line precautions have had to be taken against the inroads of *Anterior Poliomyelitis* (infantile paralysis) which has been present during a part of the year as an epidemic in some of the adjoining states.

Asiatic Cholera.—Since my last annual report this disease has been reported in the following countries: Austria-Hungary, Borneo, Ceylon, China, Egypt, Germany, Greece, India, Indo-China, Japan, Java, Korea, Persia, Philippine Islands, Russia, Siam, Straits Settlements, Turkey in Asia, and Turkey in Europe.

On account of the prevalence of Cholera in many localities in Asia, steerage passengers arriving at your British Columbia quarantine station at William Head were subjected to bacteriological examination, and were not admitted to entry until it had been determined by such examination that they were not cholera bacillis carriers. This was continued until the 24th of February last. Up to that time 1,087 bacteriological examinations were made. No cholera carrier was found. At that date the threatening had so far passed that this examination ceased to be necessary, and was consequently suspended. Similar action was taken at the same time at the contiguous United States stations.

In the British Medical Journal, September 30, 1916, Capt. H. Grame Gibson, R.A.M.C., gives the following account of a new solid medium for the isolation of the cholera vibrio:—

> Based on the fact that the cholera vibrio alone of all the intestinal organisms acidifies starch, the following alkaline medium has been devised for its rapid isolation.
>
> Owing to the medium possessing differentiating properties it should be especially useful in the detection of "cholera carriers," as the fæces emulsified in broth can be plated directly on to it. In the case of water examination, after enrichment in peptone water for a few hours, if a drop or two of the peptone water is plated a tentative diagnosis can be arrived at in eighteen hours owing to the allied vibrios taking a longer time than the true cholera vibrio to

bring about acid production. The formula is: Agar 30 grams, peptone 10 grams, starch 10 grams, sodium bicarbonate 1.5 grams, litmus (sufficient to colour medium), and water 1,000 c.cm.

Weigh out 30 grams of powdered agar and emulsify with 250 c.cm. of cold water. Then weigh out 10 grams of peptone (Chapoteaut and 1.5 grams of sodium bicarbonate. Mix together and emulsify in another 250 c.cm. of cold water. The two emulsions are then mixed in a two-litre flask and another 500 c.cm. of water added. The solution is complete in the steamer. When dissolved the medium is clarified with white of egg and filtered in the steamer.

Weigh out 10 grams of potato starch, emulsify it with some of the filtered agar, and add the emulsion to the remainder of the medium.

The whole is sterilized by the fractional method, after which enough sterile watery solution of litmus is added to bring about a blue colour of the medium.

The final reaction of the medium will be found to be −2 to phenolphthalein. I tried several degrees of alkalinity and found that 0.15 per cent sodium bicarbonate gave quite the best results.

If the plates are examined eighteen hours after inoculation, by looking obliquely through them with a dark background behind, the plate being held parallel to the window, the cholera colonies will be seen to have acquired a faint pink colour, while the colonies of the other intestinal organisms are blue or of a whitish colour. The examination is facilitated by the use of a hand lens. At this time the allied vibrios also produce blue colonies, but at the end of about thirty-six hours they also acidify the medium, though to a less extent than cholera.

At the end of twenty-four to thirty-six hours the cholera colonies have attained a delicate pink colour with a faint pink halo round them, while the other colonies still remain blue; also the colonies are of a good workable size to pick off and proceed with the serological tests.

After forty-eight hours, if the cholera colonies are in excess and the plate spread somewhat thickly, the medium itself becomes distinctly acid, and colonies other than those of cholera take on the pink tinge. However, the cholera colony even at this time can still be distinguished by the deeper red centre which the other colonies lack.

The only other organisms which are known to acidify starch are some of the diphtheroid group and some of the non-pathogenic water vibrios. These should not present any great difficulty, as Gram's stain on the one hand, and the serological test on the other, dispose of these organisms.

Experiment 1.—Ten cubic centimeters of broth were inoculated by emulsifying some faeces in it. To this was added a very small quantity of a culture of *V. cholerae*. The tube was well shaken, and 0·25 c.cm. of the broth transferred to a second tube of broth. Two drops of this broth were immediately plated on to the medium, the same rod being successively used for three plates. The first plate was too crowded to be of any use, but the second and third plates gave good discrete colonies, and on these plates the cholera colonies could be recognized in eighteen hours. Every colony on these plates was picked off, and all the pink colonies were proved to be cholera, whilst the blue colonies in every case proved otherwise.

Experiment 2.—The first broth tube from the previous experiment was kept at room temperature for two days. At the end of that time 0·25 c.cm. of this broth was added to 10 c.cm. of fresh broth, and a drop of this was immediately plated out as in the first experiment. The plates were rather too thickly spread to give good discrete colonies, but the cholera colonies could be easily detected. These colonies were again tested with cholera immune serum, and the differentiation proved correct.

Experiment 3.—This experiment was undertaken to see whether any of the normal water vibrios were capable of acidifying starch. The water was taken from a pond after heavy rain, and was taken straight to the laboratory. Some of the water was first enriched by incubating in peptone water for a few hours. One drop of this peptone water was then plated, and at the end of eighteen hours a few pinkish colonies were present. Some more of the water was plated direct, and in this case it took twenty-four hours before any pinkish colonies appeared. In both cases the pink colonies that were present were of a lighter shade than that which is produced by the cholera vibrio, and I do not think that they are very likely to be confounded with it. In addition, the red centre to the colony that is produced by the cholera vibrio in forty-eight hours was not present in these cases. This organism proved to be a normal vibrio of water..

Other Experiments.—The following organisms were also plated out: *B. typhosus, B. paratyphosus* A, *B. paratyphosus* B, coliform organisms, *B. dysenteriae* (Shiga and Flexner), *B. enteritidis* (Gaertner), streptococci, V. Finkler Prior, *V. metchnikovi.*

In no case did the above organisms acidify the medium, except in the case of the two vibrios, which produce a slight pink halo, but the colonies themselves, when viewed obliquely, do not become pink until a very much longer time has elapsed than that required to recognize the vibrio of cholera.

In a recent number of *The American Journal of Tropical Diseases and Preventive Medicine,* Allan J. McLaughlin, United States Public Health Service, Commissioner of Health of the Commonwealth of Massachusetts, says in speaking of improvement in media:—

One other advance in our methods of handling Asiatic cholera suspects has been made by Goldberger, which promises to increase our efficiency in detecting Asiatic cholera carriers when making stool examinations on a large scale.

There has been no great change in the bacteriologic methods of Asiatic cholera diagnosis in the past ten years, and these methods are based upon the procedure of the German Imperial Health Office.

As a time-saving measure, test tubes are used instead of large flasks for the peptone solution. This necessitates that the amount of feces added to the tube must be small, and if the vibrios are very scarce a carrier might be recorded as negative. Large flasks and many platings are impracticable on a large scale where the daily examinations may run in thousands. Goldberger's media permit the planting of relatively large quantities of feces, using the same convenient size of test tubes.

Goldberger suggests two enriching solutions, an alkaline egg peptone, and an alkaline meat infusion peptone. The cholera vibrio grows well in both solutions, though less luxuriantly than in ordinary cholera peptone. The multiplication of the ordinary fecal bacteria is markedly restrained, especially the colon bacillus. Goldberger's work shows that in his media the vibrios, if present even in small numbers, will increase and not be overgrown, even after seventy-two hours.

Goldberger's media were devised after a careful study and test of the various selective media suggested by Dieudonné, Neufeld and Wiothe, Esch, Pilon, Crenderopoulo and Panayotatou, Krumwiede, Pratt and Grund, Hoffman and Kutscher, Moldavan and others.

The addition of Goldberger's media to our equipment should make the passage of an Asiatic cholera carrier through our quarantines still more unlikely. It is true that this medium has not yet been tested in actual field work, but the laboratory tests suggest that it is the most valuable addition to our cholera technic which has been made in recent years.

Bubonic Plague.—This disease has been reported during the year in the following countries: Argentine, Azores, Brazil, Ceylon, Chile, China, Ecuador, Egypt, Great Britain, Greece, Hawaii, India, Indo-China, Japan, Java, Mauritius, Persia, Peru, Russia, Straits Settlements, Siam, Union of South Africa, British East Africa.

How plague may be present in rats without making its appearance in man is well illustrated by the experience of the steamship *City of Durham.* The history of this vessel emphasizes what students of the subject know must be true, namely, that throughout the world there are many ports infected with plague in which the presence of the disease is not known because human cases have either not developed at all or not in sufficient numbers to attract attention. Such ports in turn undoubtedly serve as foci from which the infection is carried by rats to ships and thus to other ports.

The steamship *City of Durham* arrived at Hongkong August 23, 1916, without cargo, from Shanghai, China, and proceeded at once alongside of a concrete rat-proof wharf. Immediately upon arrival the ship was fumigated with 4 per cent sulphur dioxide. After the fumigation six dead rats were found. Examination of these rats showed that two of them were plague infected. The crew of 66 men were immediately examined and none found sick. The captain stated that no case of human plague had ever occurred aboard his ship.

This steamship is engaged in a geneal freight trade between New York, Boston, Philadelphia, and ports in the Far East, including Calcutta, Bombay, Rangoon, Vladivostok, Japan ports, Shanghai, Hongkong, and others. On her last voyage the ship left New York June 17, 1916, calling at Colon, Canal Zone, San Francisco, Muroran, Vladivostok, Shanghai, and Hongkong in the order named. The master of the ship stated that while en route between Colon and San Francisco a member of the crew died of "internal trouble" June 29 and was buried at sea. On previous voyages the ship had been alongside the wharves at Calcutta and Rangoon, but whenever tied to a wharf standard rat guards had always been used on all lines. It was further stated that rats had very seldom been seen on the ship and the master had never known of sick or dead rats being found on the vessel.

Great Britain.—Eleven cases of human plague have been reported during the year. Three in Bristol, August 18-31; two in Hull, August 19-31, with one death; and six in Liverpool, Sept. 22-Oct. 6, with three deaths.

The Local Board of Health of England and Wales stated that the three cases reported at Bristol occurred in persons connected with a rag factory in that city, and one of the cases at Hull was in a boy who had been at work on the steamship *Kench* lying at Hull for repairs. The three cases reported at Liverpool on September 22 occurred in residents in the stable warehouse district one mile distant from the waterfront, and were all in persons of the same family. The last plague-infected rat at Liverpool was reported found during the month of October, 1916. In London during the period from October 5 to November 6, 1916, out of 601 rats examined four were found plague-infected. The last plague-infected rat was found November 6, 1916.

Plague-infected rats have also been found during the year in Hong Kong, Shanghai, Hawaii; and in New Orleans and Seattle, Wash., in the United States. The last one at Seattle was reported by Surgeon Lloyd as having been on the 16th of this month at Pike Place market, between Pike and Pine streets, and was proved positive for plague infection on the 28th instant.

In California plague infection continues also amongst the ground-squirrels. For the following summary with relation to places in California I am indebted to the Public Health Reports issued by the United States Public Health Service.

Record of Plague Infection.

Places in California.	Date of Last Case of Human Plague.	Date of Last Case of Rat Plague.	Date of Last Case of Squirrel Plague.	Total Number Rodents Found Infected since May, 1907.
Cities:				
San Francisco	Jan. 30, 1918.	Oct. 23, 1908.	None	398 rats.
Oakland	Aug. 9, 1911.	Dec. 1, 1908.	"	126 rats.
Berkeley	Aug. 28, 1907.	None	"	None.
Los Angeles	Aug. 11, 1908.	"	Aug 21, 1908.	1 squirrel.
Counties:				
Almeda (exclusive of Oakland and Berkeley).	Sept. 24, 1909.	[1]Oct. 17, 1909	June 23, 1916.	293 squirrels; 1 wood rat.
Contra Costa	July 13, 1915.	None	June 28, 1915.	1,629 squirrels.
Fresno	None	"	Oct. 27, 1911.	1 squirrel.
Merced	"	"	May 12, 1916.	7 squirrels.
Monterey	"	"	May 27, 1916.	38 squirrels.
San Benito	June 4, 1913.	"	July 1, 1916.	72 squirrels.
San Joaquin	Sept. 18, 1911.	"	Aug. 26, 1911.	18 squirrels.
Santa Clara	Aug. 31, 1910.	"	June 21, 1916.	32 squirrels.
San Luis Obispo	None	"	Jan. 29, 1910.	1 squirrel.
Santa Cruz	"	"	May 30, 1916.	5 squirrels.
Stanislaus	"	"	June 2, 1911.	18 squirrels.
San Mateo	"	"	June 21, 1916.	1 squirrel.

[1] Wood rat.

The work is being carried on in the following-named counties: Almeda, Contra Costa, Stanislaus, San Benito, Santa Cruz, Monterey, Merced and Santa Clara.

Passed Asst. Surg. Williams reported that a squirrel killed March 16, 1917, in San Mateo county, Cal., 2 miles west of San Mateo, was proved positive for plague infection March 29, 1917.

In June, 1916, a plague-infected squirrel was shot near Redwood city, San Mateo county. This was the first infected squirrel that had been found in this county. San Mateo county had constituted a presumably uninfected barrier between the city of San Francisco and the territory in which infected squirrels were known to be present. Redwood city, where the first squirrel was found, is 20 miles from San Francisco, while the locality where the second squirrel was found near San Mateo is 10 miles nearer the city. If this indicates that the infection is travelling north in San Mateo county, measures will need to be taken to prevent the further spread to the suburbs of San Francisco and the reinfection of the rats in the city.

In South America, Col. D. C. Howard, Chief Health Officer, Balboa Heights, Canal Zone, states:—

> Bubonic plague has shown no decrease in its distribution in South America during the year of this report, but on the contrary has probably extended to localities previously considered non-infected or at most only in the suspicious class. One marked increase of this disease occurred in the vicinity of Paita, Peru, and an extension of the disease northward from Guayaquil, Ecuador, has taken place, involving the country districts in the vicinity of Manta and Bahia, Ecuador, these ports are a relatively short distance below the Colombian border and the prevalence of plague in these vicinities can only mean an extension of the disease northward and closer toward zone ports. In view of the fact that plague is so generally distributed, along the west coast of South America

particularly, we have endeavoured to tighten and improve our anti-plague measures with reference to the ships in zone ports. Our local measures of breasting off, rat guarding, raising of gangways at night, fumigation, etc., have been watched very closely because the potential danger to the zone from the standpoint of rat introduction is much greater than through the agencies of human transmission. To this end mechanical cleanliness and improved sanitary conditions aboard ship have received careful attention, and the value of all these measures emphasized to the local shipping interests.

In India the following figures give some indication of the ravages of plague: October 15 to December 23, 1916, cases 89,512, deaths 67,068; December 31, 1916, to January 13, 1917, cases 30,487, deaths 23,538; January 21 to 27, cases 15,872, deaths 12,783.

Smallpox.—This disease has had its worldwide prevalence again this year. It has not shown itself at any of your Atlantic ports of entry, possibly from the small number of passengers arriving. It has been brought from the Orient to your William Head, B.C., station. In a speech made by Socialist Deputy Hoffmann in the Reichstag, March 22, he is said to have stated that there are 30,000 cases of smallpox in Germany and that the disease is spreading rapidly. This report, which has been repeated by newspapers in Austria, has been denied by the German authorities, who admit that there have been 135 cases of smallpox in Berlin alone, with eleven deaths.

Typhus Fever.—With regard to this disease the *Medical Record* says:—

Typhus fever, one of the oldest diseases of which record can be found, was up to two years ago an almost forgotten malady, at any rate, as an epidemic True, in many countries, in which sanitation was backward, and especially where domestic hygiene was lacking, typhus was endemic, and, as First-Lieut. Horace C. Hall points out in the *Military Surgeon,* November, 1916, in the Balkans, Turkey, Persia, Arabia, China, and in Asia generally typhus has been endemic since the earliest of folk-lore legends. And within the past three centuries, along lines of commercial intercourse and travel, the disease has become largely endemic in Russia, Poland, Austria, Germany, and Latin America. But, as said before, there has been no serious epidemic of typhus fever until war conditions spread the disease through Serbia, and disturbed economic conditions in Mexico disseminated the infection far and wide in that country. It is a disease which is spread by neglect of proper sanitary precautions and conditions favourable to vermin also favour the spread of typhus. in fact, it has been demonstrated that the disease may be transmitted from man to monkey and therefore presumably from man to man by means of the common body louse. While admitting that the body louse does convey the infection and that the head louse and bedbug may be regarded as suspicious conveyers, Hall thinks that it has not been conclusively proven that vermin are the only means of conveying the disease. The predisposing causes of typhus are famine, filth, overcrowding, and conditions favourable for the thriving of vermin.

The main means of prevention are to find and kill the lice and bugs, a difficult task indeed when dealing with a primitive and dirty people such as the Mexican peons, the class of individuals among whom Hall gained his experience.

With regard to treatment it was found that immunizing vaccine, so far available, had not been of any material service. Hall controls the fever with baths, the delirium with bromides and an ice-cap, and gives egg albumen in water, even though it has to be placed in the stomach through a tube passed through the nose. He gives large broken doses of calomel, followed by mag-

nesium sulphate and high enemata which are left in as long as possible. If the urine is scanty, these enemata are of physiological salt solution. He begins the strychnine as a matter of routine, to combat the muscular weakness which is certain to follow. An ice-cap is kept on the patient's head and he is bathed not oftener than four times within the twenty-four hours. When the crisis is approaching Hall gives hypodermic injections of camphor in oil, alternated with spartein sulphate, to tide over the period.

The only specific complication noticed by this observer is that of gangrene of the leg, most commonly the left, below the seat of election for amputation just below the knee It is a dry gangrene, extremely painful and slow to show the line of demarcation. In 95 per cent of such cases it is best to amputate, as soon as the line of demarcation is indicated. Hall remarks that in 25 per cent of the educated, high-strung civilized American patients he has treated for this disease he has observed a form of toxic insanity complicating the final outcome of the cases. This is due, no doubt, to the continued high fever and severe toxic poisoning. This insanity is not transitory, that is to say, that while within a few weeks the reasoning power returns to nearly normal, there remains a mild delusional insanity for a considerable period.

The Medical Journal states:—

Naturally the occurrence of typhus fever on a large scale in some of the countries engaged in war has aroused much interest in the cause and prevention of this disease. Most physicians are familiar with the measures used for preventing typhus infection by destruction of the body louse. At this time attention is directed to observations bearing directly on the primary cause of typhus fever. Some time ago Plotz described a bacillus, *B. typhi-exanthematici*, which he cultivated from the blood of a patient with the mild form of typhus—Brill's disease—occurring in New York, and also from the blood of immigrants with typical epidemic typhus. Now the bacteriologic study of the blood has been extended to the disease as it occurs in the Balkans and Russia, as well as in Mexico, blood cultures on typhus patients in these countries in a large percentage of cases revealing the presence of *B. typhi-exanthematici*. In Mexico, Olitsky, Denzer and Husk obtained the bacillus in most of the cases studied, the bacilli being most numerous in the early stages of the attack and in the most severe forms of the disease. They found the blood of the typhus patients whom they studied to be infectious for guinea pigs, and recovered the bacillus from the spleen of guinea-pigs infected with typhus blood or by means of lice from typhus patients. They also assert that they have obtained the bacillus from lice from typhus patients; but when so isolated the bacillus is gram-negative, becoming, however, gram-positive on subculture. Baehr and Plotz, who made the investigations in the Balkans and Russia, obtained cultures of the bacillus from the blood in nineteen of forty patients in Serbia and Bulgaria, while in Russia and Galicia, where the conditions were more favourable, the cultures were positive in nineteen of twenty-four cases. They were able to show that the bacillus is present in the blood during the entire course of the fever from the first day on, and that the more severe the disease the more marked the bacteremia. In two cases in which cultures were made during the initial chill, the blood contained enormous numbers of bacilli; in one case ninety-one colonies developed to each cubic centimetre of blood inoculated.

The results obtained so far from blood cultures show, then, that the bacillus described by Plotz appears to be present in the blood in the febrile period of typhus fever as it occurs in the United States (Brill's disease and epidemic typhus), Mexico, Serbia, Bulgaria, Austria and Russia, and certainly the intimate association of this bacillus with typhus fever would seem to be estab-

lished clearly enough. It is a matter of regret, however, that, owing to the prevailing conditions in the countries in which the disease now is epidemic, it has not been possible to carry on still more extended investigations on this important bacillus, more particularly in the line of prophylactic inoculations, which, so far as the results at hand appear to indicate, may be of great value. The agglutinius for *B. typhi-exanthematici* first appear at about the time of the crisis and describe a typical immunity curve.

An exceedingly interesting development in the typhus work is the demonstration of Prowazek, Rocha-Lima, and Toepfer and Schüssler that lice which have bitten typhus patients in the febrile stages of the attack contain large numbers of peculiar minute bodies, especially in the epithelial cells of the digestive tract. In Giemsa preparations these bodies are reddish, short, elliptic and coccus-like, sometimes with polar staining. It may be recalled that Ricketts and Wilder also described rods with polar bodies in lice infected with typhus fever, and Rocha-Lima has given these bodies the designation *Rickettsia prowazeki.* So far these bodies have been found only in lice which have been picked up from typhus fever patients or from their clothes or from other sources, and placed on typhus fever patients and allowed to bite them. Early in the attack there are only a few infected lice found on the typhus patient under natural conditions, but as the attack progresses the number increases and in the early stages of convalescence most of the lice found are said to contain the bodies. Experiments appear to show practically the same conditions; that is to say, early in the disease the lice must be left in contact with the patient longer before the bodies develop to any extent; but toward the ninth day or so, only a short time, even a single bite suffices. When convalescence has set in it is impossible to secure the development of the bodies by letting lice bite the patients. As stated, the bodies are absent in lice obtained from healthy persons and from persons suffering with diseases other than typhus fever; hence the presence of such bodies in a number of lice obtained in suspected cases of typhus fever is said to be sufficient to make the diagnosis of typhus. Teofer and Schüssler state that abortive cases of typhus fever give rise to a rich development of *Rickettsia* in lice. Lice containing them are infectious for guinea pigs; that is to say, when guinea pigs are injected with suspensions of crushed bodies of such lice, they develop the febrile reaction which is regarded as characteristic of typhus infection in guinea pigs. Rocha-Lima was unable to obtain growths of the bodies in the mediums employed by Plotz to grow *B. typhi-exanthematici,* and he also found only a superficial similarity between the Plotz bacillus and *Rickettsia,* the bacillus being larger and gram-positive, whereas the bodies are gram-negative; but Baehr and Plotz appear to regard the bodies as identical with the bacillus, and Olitsky, Denzer and Husk report the successful isolation of the Plotz bacillus from typhus lice.

Nicolle is an investigator of typhus fever who holds that we are still ignorant of the actual cause of the disease. In his experimental work he employs what he calls typhus virus, by which is meant virulent emulsions of the spleen and other organs of typhus-infected guinea pigs. His most recent work deals with the production of an antityphus serum. The serum from typhus convalescents having been found to possess specific preventive properties, he assumed that the typhus virus serve as antigen. Accordingly, asses were injected intravenously with emulsions of leukocytes of infected guinea pigs, and then many times with emulsions of spleen. The serum was found to acquire antityphus properties, being preventive as well as curative in guinea pigs, and the Tunisian investigators even claim that the serum has given favourable results in human-typhus, the death rate in a series of serum-treated cases being much reduced as compared with the ordinary death rate. By means

of suitable immunity tests, Nicolle shows that Algerian, Moroccan and Balkan typhus viruses appear to be identical. These apparently significant results are not of necessity inconsistent with the view that the bacillus described by Plotz is the cause of typhus, as this bacillus has been found in the blood and organs of guinea pigs infected with typhus and consequently may have been the actual agent of immunization. If that is the case, immunization with the bacillus itself should give the same or even better results. At all events, it is clear enough that still further work will be required to settle all the questions as to the causation of typhus, even though great progress has been made.

Soldiers of the Turkish army in Syria are dying from typhus at the rate of 1,000 a day, according to a despatch from the country forwarded through Port Said and given out by the American committee for Armenian and Syrian relief. In addition to the famine from which the people of Syria are long reported to have been suffering, epidemics of both typhus fever and cholera are sweeping over that country, the despatch says.

Outbreaks of typhus fever in Germany have occasioned fresh attempts to be made to discover the micro-organism of this disease. Bofinger has figured appearances in the red blood corpuscles, which bear a very close resemblance to Seidelin's "bodies" in yellow fever; in view of the findings in the third report of the Yellow Fever Commission (West Africa) these objects may safely be excluded as bearing any causal relation to the diseases under consideration. Goldenstein, when investigating an epidemic due to Macedonian prisoners of war at Sofia, obtained a motile bacillus in pure culture from the blood of thirteen out of twenty-four patients during life. Unlike the organism of Plotz, it grows under aërobic conditions. It is a very short diplobacillus, and on agar forms small dry scale-like colonies of yellowish colour. On subculture a more definitely bacillary form is assumed, and the colonies become softer in consistency; it reacts negatively to Gram's stain. Gelatine is not liquefied. The serum of patients with fully developed typhus fever agglutinated this organism by the hanging drop method in dilutions varying from 1 in 50 up to 1 in 1,600 in one case. Injection of cultures into guinea-pigs caused only the unsatisfactory phenomenon of fever, which lasted for five to ten days and then disappeared. The author himself preserves an open mind as to whether he has found the true causal agent.

Though the transmission of typhus by lice is generally accepted as proved, yet the disease has been acquired under conditions in which there was no intimate contact with patients and the mode of passage of the sluggish louse from the infected to the healthy individual appeared inapplicable. Schilling, finding that Turkish officers entertained the belief that lice could be borne through the air for a considerable distance, tested this belief by an experiment which consisted of standing in a moderate wind a short distance to leeward of infested men who had stripped. Small lice, measuring about one-twelfth of an inch, appeared on the outer surface of the clothing of the observers, and it was concluded that they had been detached and carried along by the wind. The adult louse is usually anchored to the under surface of the shirt, but young lice are more active and would therefore be the more readily detached. The observation, if confirmed, may help to clear up some difficulties in explaining the spread of typhus fever in certain circumstances.

Yellow Fever.—The British Medical Journal speaking of the Yellow Fever Commission appointed by the Colonial Office, says:—

A series of reports on questions connected with the investigation of non-malarial fevers in West Africa, instituted by the Yellow Fever Commission recently appointed by the Colonial Office, have been published as supplements of the Yellow Fever Bureau *Bulletin*. They form two bulky volumes, of which the first has 7 plates, 9 plans and maps, and 128 charts, the total number of

pages being 352. Volume II has 12 plates, 1 map, 107 charts, and contains 400 pages. It is thus evident that an enormous mass of material has been collected, and Sir James Kingston Fowler in his preface states that "whilst accepting no responsibility for the views expressed in these reports, the Commission are of opinion that the results of these researches, conducted, as many have been, in the face of very great difficulties, should be placed on record, not only to commemorate the painstaking efforts of the investigators concerned, but also because they may prove useful as a basis for criticism and discussion, and may thus assist in the solution of the problems which still confront those whose administrative duties bring them into contact with yellow fever."

The recent history of yellow fever in West Africa is interesting. The late Sir Rubert Boyce, it will be remembered, some years ago propounded the theory that yellow fever was universally endemic all over the West Coast of Africa. If he had said that it prevailed endemically in certain areas, probably no one would have seriously disagreed with him, but the assertion of its universality was severely criticised. In many ways, however, these present reports are a result of Boyce's views. They bring out the fact—a fact, however, not seriously disputed before—that epidemics of yellow fever do from time to time occur in West Africa, the origin of which cannot be traced to importation from other parts of the world. The disease can, then, be spoken of as being endemic in West Africa, or at least in parts of it.

Yet another point brought out is the difficulty of diagnosing yellow fever, not only clinically, but even in some instances pathologically after death. The parasite of yellow fever is still unknown; there is therefore no single definite test by which it can be established that any individual case is or is not one of yellow fever. Mild atypical cases are notoriously difficult of diagnosis, and as those who thus suffer do not die, it is not possible to be absolutely certain the attack was one of yellow fever. This is a point in connection with which much work remains to be done. It is, of course, right to state that Seidelin, one of the commissioners' investigators, claims that he has discovered the parasite of yellow fever, and the open-minded attitude the commission takes is shown by the fact that papers for and against that view appear side by side in the second volume of these reports. The destructive criticism of Seidelin's views contained in a recent paper by Wenyon and Low finds support in papers by David Thompson and Lieutenant-Colonel Harvey, and it seems probable that the suggestion that the paraplasma is the parasite of yellow fever will not survive. In that case much of the matter in Volume II will have no permanent value, as, for instance, the chapters on experimental yellow fever in laboratory animals, reports on the transmission of *Paraplasma flavigenum*, and the report on some histological lesions observed in laboratory animals infected with yellow fever. Apart from these criticisms, many of the other reports are very valuable, and show evidence of careful and painstaking work. Lieutenant-Colonel Statham's conclusions on page 386 should be carefully noted by future investigators of the disease in West Africa. The pendulum has swung to the other side, and, as he states, fever with transient albuminuria is now considered highly suspicious of yellow fever. Albuminuria, however, is common not only in some of the types of malaria, but also equally in many other conditions, so that too much stress must not be laid on the symptom. Dr. Wyler's and Dr. Leonard's reports give a good idea of the yellow fever cases observed in Lagos during 1913 and the beginning of 1914. No one who has seen yellow fever in the West Indies and South America can read these reports without being convinced of the correctness of the diagnosis. Some of the cases which showed malarial parasites in the blood—notably, for example, Case 26, p. 270—might be questioned, but about the majority there is not the slightest doubt. The only point

lacking in the reports of the cases is the absence of careful blood counts per cubic millimetre and differentially. It is a pity that so good a chance was lost.

The volumes as a whole, then, form a valuable contribution to our knowledge of yellow fever, and they will no doubt give rise to criticism and discussion. One word of warning to those who administer the West Coast colonies—*Stegomyia fasciata,* the carrier of yellow fever, seems to be as prevalent as ever in many parts of the coast. Now is the time to act against it. To wait until another epidemic appears will be too late. To be forewarned is to be forearmed; remove the intermediary and there will be no further trouble with the disease it carries. The examples of Cuba, Panama, Colon, and Rio point the way.

Enteric Fever.—The Department of Militia and Defence have just announced that for the twelve months ending December 31, 1916, only 167 cases of typhoid fever were reported as having occurred amongst the many thousands of men of the Canadian Expeditionary Force in Canada, notwithstanding the fact that typhoid fever is endemic in all parts of Canada, and is a disease especially affecting young adults from 17 to 30 years of age. This comparative freedom on the part of the Canadian Expeditionary Force is seen to be most striking when it is recalled that during the Boer war one man out of every nine in the British forces in South Africa was invalided through this disease, and that in the Spanish-American war, of 107,000 men in the camps at Tampa, Florida, and elsewhere, who had not left the shores of the United States, 20,000 contracted the disease. The remarkable change can only be attributed to inoculation. The Provincial Board of Health for Ontario has supplied to date all the typhoid and paratyphoid vaccine used by the entire Canadian Expeditionary Force (about 450,000 men). In all, nearly 600,000 doses have been supplied free of cost.

At the German Congress of International Medicine, which has been in session at Warsaw, Surgeon-General Huenermann reported that in the worst typhoid month (December, 1914), since the war began the number of typhoid cases in the German army was only one-fourteenth as many as in the worst month of the Franco-Prussian War, when the total number of German troops in the field was far smaller than now. The use of the Pfeiffer-Kolle anti-typhoid vaccine, which is now in general use, has, he said, been given in millions of instances without any serious consequences, and it was due to this vaccine that such a wonderful reduction of typhoid fever cases has been brought about.

To quote an extract from the London *Times'* report of the speech in the House of Commons on March 1 of Mr. H. W. Forster, financial secretary to the War Office:—

Nothing in the war was more striking than the triumph of science over disease. One of the most remarkable phenomena was the almost total disappearance of enteric fever, the dread scourge which in former wars had decimated our armies even more effectually than the efforts of the enemy. That was the more surprising when one considered the vast numbers of men, their density on the ground, and the poisoned condition of the soil, especially in France.

The last weekly returns of the number in hospitals suffering from typhoid fever were: France, four cases; Saloniki, nine; Egypt, three; Mesopotamia, eight; total, 24. The fever among British troops in France up to November 1 last year was 1,684; para typhoid 2,534 and indefinite cases 353, a total of 4,574. In the South African war nearly 60,000 cases were admitted to hospital, and there were 8,227 deaths. Thus several times as many died from this disease in South Africa as there were cases in France up to November 1 last.

The admission ratio of typhoid fever among the troops in France who had not been protected by inoculation was fifteen times higher than amongst those who had been inoculated and the death ratio was seventy times higher.

Leprosy.—There are at present in your lazaretto at Tracadie, N.B., thirteen leper patients, six males and seven females. This is the smallest number for many years past. There were two deaths during the year. There were not any admissions. Ten are of French-Canadian origin, one of Icelandic, one of Russian, and one of Assyrian.

The Medical Superintendent, Dr. Langis, reports in part as follows: It is now six months since we resumed the treatment by means of intramuscular injections of chaulmoogra oil, combined with camphor and resorein. We inject 5 c.c of this compound once a week. The good results obtained at the San Lazaro Leper Hospital, Manila, and elsewhere, by administering the oil with the hypodermic syringe, these last three or four years, decided five of our patients to submit to the objectionable pain caused by the needle. It is sore, especially the young ones find it so, but the good derived from it more than compensates the suffering, which generally does not last long. There have been no inflammatory processes following these injections.

The inmates taking advantage of this treatment from the very first experienced some relief, and if they continue a few months longer we hope to find them greatly improved.

To this date, with two female patients, thirteen and nineteen years old, the youngest has improved the most. The few nodules on her face are disappearing; also the characteristic macules and infiltrated patches on her body. The other is an advanced case, but with her so far the improvement is remarkable.

With the other women, one a tubercular, the other a mixed type of leprosy, the disease is not progressing. Results obtained so far are encouraging.

The fifth case, a male, suffered with keratites, but the opacity on the cornea is slowly disappearing.

The evidence in favour of chaulmoogra oil so administered is well demonstrated in our small colony by comparing almost similar cases of the disease who obstinately refuse the injections. They are complaining and getting worse every day. the disease with them is fast progressing.

The medical superintendent of the Lazaretto writes: "I wish to express my deep appreciation of the good sisters for their unfailing assistance and co-operation. The sublime service rendered by them to our unfortunate lepers especially during the last and most trying stage of the disease, cannot be given in words to do them justice."

To this I desire to add my tribute of praise and appreciation. Nothing could be nobler than the self-effacing devotion exhibited in their attendance on the lepers, evidently from the highest possible sense of religious duty.

In the United States in 1915, special blanks sent to the health departments of states and to cities having a population of over 10,000 at the time of the 1910 census asking for information regarding the known occurrence of leprosy in their respective jurisdictions during the calendar year 1915. The following table gives the information furnished in the blanks returned. It is probable that there were a few known cases in cities from which no reports were received. Undoubtedly there were also a number of cases which were not reported because their existence was unknown to the health departments.

REPORTS of Leprosy, by States, for 1915.

State.	Reported during 1915.	Died or removed, 1915.	Present Dec. 31, 1915.	Isolated under State control.	Isolated under local control.	Not isolated.
District of Columbia			1		1	
Hawaii	70		670	670		
Leper settlement, Molokai			614	614		
Kalihi Hospital, Honolulu			56	56		
Louisiana :						
Lepers Home of Louisiana			102	102		
Massachusetts	2		12	12		
Penikese Hospital			12	12		
Michigan			[1]			
Bay City			1			
Big Rapids			1			
Three Rivers			1			
Minnesota	1		10	[2]	[2]	[2]
Albert Lea			1			
Cokato			1			
Elbow Lake			1			
Brown County—			1			
Linden Township			1			
Maple Bay			2			
Minneapolis			1			
Montevideo						
Freeborn County—			1			
Moscow Township			1			
St. Paul						
Oregon	1	[3] 1				
Philippine Islands	841		4,472	3,972	250	250
Culion			3,680	3,680		
San Lazaro			292	292		
Various Provinces			[4] 500		250	250
Porto Rico	3		37	37		
Leprosy colony			37	37		
Tennessee :						
Slayden	1	1				
Washington			[5]			

[1] The health officer estimates at least 15 cases in Michigan.

[2] The health officer states: "In one sense, none; in another sense, all, because we advise how these cases shall be handled. All cases, however, are practically isolated at home or in some institution. One case is isolated on a county poor farm."

[3] Patient died October 7, 1915.

[4] Estimated

[5] Some cases at Diamond Head, not under State control.

A French historian in connection with the introduction of the alleged cure for tuberculosis by Dr. Friedmann a few years ago, calls attention to the little-known fact that the medicinal use of the sea turtle is by no means of recent date.

On July 8, 1483, King Louis XI of France sent George the Greek, master mariner, to the Cape Verde islands to seek "various things touching nearly to the well-being and health of our person." The Cape Verde islanders had the reputation of possessing a cure of leprosy, a report of which had been brought back to France by a traveller from the coast of Guinea at about the time King Louis was in declining health. According to the recital of this traveller, the big sea turtles were caught by the islanders when they came out on the beach at low tide to feed. They were at once killed and their blood caught in large tubs. Persons afflicted with leprosy bathed in the blood and afterwards ate of the turtles' flesh. This treatment was kept up for two years, at the end of which time the patients were usually completely cured of the dreadful disease.

This record would tend to show that Louis XI was a leper. That such was the case had been rumoured by chroniclers, but the reason of the expedition to the Cape Verde islands, now published for the first time, throws much light on the psychology of Louis XI, his ill-humour and his sedulous avoidance of mankind during the last days of his life. The wretched man evidently believed himself smitten with leprosy. He was, however, never fated to test the efficacy of the sea turtle remedy for he died August 30, 1483, before the return of the expedition.

In the *British Medical Journal,* October 21 last, Sir Leonard Rogers, Professor of Pathology, Calcutta, inserts a preliminary note on the intravenous injection of gynocardate of soda in leprosy. He writes as follows:—

> In a recent paper I recorded a long experience of gynocardates by the mouth, and six months' use of solutions injected subcutaneously in the treatment of leprosy, and stated that this line of treatment had given greater improvement in my hands than any other. I find from my correspondence that as early as July, 1912, I inquired from a leading firm of manufacturing chemists if they could supply me with a soluble form of gynocardic acid or magnesium gynocardate suitable for hypodermic injection, but received a reply in the negative. In my recent paper I regarded gynocardic acid and chaulmoogric acid as synonymous on the strength of the following statement in the last (1915) edition of Martindale and Westcott's *Extra Pharmacopoeia*: "Chaulmoogra oil contains a quantity of palmitic acid, with three other fatty acids; of these the so-called gynocardic acid (chaulmoogric acid) is supposed to be the active ingredient."
>
> Dr. Pyman has kindly informed me that this view is erroneous, as the work of Moss, and subsequently of Power and Gornall, showed that, on fractionizating the total fatty acids of chaulmoogra oil, those with the higher melting points, including palmitic and chaulmoogric acids, the sodium salts of which are very sparingly soluble in water, first separate, while Moss gave the name of gynocardic acid to the residual acids with low melting point of about 29° C., the sodium salts of which are freely soluble in water. According to Power and Gornall, Moss's gynocardic acid is not an individual substance, but is composed of a number of fatty acids with different melting points.
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> What I have used, then, for hypodermic injection in leprosy are the soluble soaps of lower melting point, fatty acids of chaulmoogra oil, which, following Moss, are rightly designated gynocardic acid, and which give the characteristic reddish-brown colour changing to olive green, with strong sulphuric acid. By further fractionization, several acids with different melting points can be separated, which may conveniently be called fractions B, C, etc. During the present year I have been isolating and investigating these with the help of Dr. Sudhamoy Ghose, D.Sc.Edin., working in the laboratory of Professor Rai Chuni

Lal Bose Bahadur, and aided by a grant from the Indian Medical Research Fund, obtained though the kindness of Sir Pardey Lukis, Director-General Indian Medical Service, to each of whom I desire to express my thanks.

I have now discovered that the sodium salts of the lower melting point fatty acids can be safely given intravenously in animals in relatively very large doses, and I have already used them intravenously in some twenty well-marked leprosy cases during the last six weeks, with results which clearly show the intravenous route to present important advantages over the subcutaneous one. I therefore propose in the present paper to place on record briefly my methods so as to allow others to test them in this distressing and widely prevalent disease. I should mention that M. Vahram has recently recorded cases of leprosy treated by subcutaneous and intravenous injections of a suspension of a dried and pulverized mixture of chaulmoogra oil and gum arabic, the dose of the oil having been only from $\frac{1}{400}$ to $\frac{1}{50}$ of a grain; yet two cases were reported as improved after some thirty injections. I find the sodium gynocardate I have been using is two hundred times less toxic for rabbits than his insoluble dried chaulmoogra oil, while my preparations have the immense advantages of being freely soluble in water, being, indeed, just the form of substance in which fats are normally absorbed from the digestive canal through the blood vessels, so the soluble gynocardates appear to possess manifest advantages over Vahram's insoluble suspension of dried chaulmoogra oil, which was fatal to rabbits in the small doses of 0·0004 gram per kilo.

These substances may be prepared either from the cold-drawn chaulmoogra oil, or, as I pointed out in my former paper, from the buttery substance obtained by further compression of the seed of *Taraktogenos kurzii* (products of which alone are dealt with in this paper, although hydrocarpus oils are also being investigated, but the soluble sodium soaps of which have been found to be more irritating when injected subcutaneously than those of *Taraktogenos kurzii*) with the aid of heat obtained by steam circulating around the compression chamber. Hitherto this product has been regarded as a waste product, although I have found it to contain a large proportion of the active substances of the oil. Briefly, the method of preparation is to saponify the oil or butter with caustic potash and absolute alcohol, the soaps thus obtained being converted into fatty acids by means of sulphuric acid. These fatty acids are dissolved in hot alcohol and separated into fractions with varying melting points by gradual cooling and removal of the acids, which solidify at differing degrees. The fractions thus obtained may be further purified by dissolving in ether and recovering again by evaporating off the solvent, by which means they are rendered somewhat less irritating when the sodium salts are injected subcutaneously, for which purpose they must be neutralized accurately with the aid of phenol-phthalein. When about two-thirds of the fatty acids have thus been separated the residual third, which is liquid at room temperature in Calcutta (about 28° C.), is obtained by distilling off the alcohol, and may be previously termed gynocardic acid C. Of the first separated two-thirds those with the higher melting points of from 43° to 40·8° C. form sodium soaps which are insoluble, or only slightly soluble in water, and may be termed fraction A. They include palmitic and chaulmoogric acids, and are unsuited for either hypodermic or intravenous use, while it is very doubtful if they are of any value internally. They constitute about half of the total fatty acids. The remaining acids of this two-thirds have melting points from 37° to 40° C. and form sodium soaps which are freely soluble in water and may be termed gynocardic acid B. A still larger number of fractions may be separated out if desired, as we have recently done. The best product for clinical use which we have yet obtained was got by extracting finely divided and dried Taraktogenos

seeds with ether and subsequent fractionization as above. The sodium soaps of fractions B and C mixed together caused very little local irritation when injected subcutaneously, while the observations on intravenous injections recorded later in this paper are mainly based on the use of this product, which clearly contains all the lower melting point acids of both the cold compressed oil and the butter obtained by further compression of the seeds with heat. It will be referred to as fractions B and C of the whole seed.

First, with regard to the further progress of the three cases described in my first paper. Case 1 has not been seen again, but I have received reports that the satisfactory condition recorded previously is maintained. Case 2 wrote to me several months after his return to Europe that a leading British authority had declared him to be free from all active signs of the disease, so he may be regarded as apparently cured, although a longer period must elapse before it will be evident if the recovery will be permanent. Case 3 is still under observation, although she has only been able to attend very irregularly for the injections. After a month's absence she returned with slight recrudescence of the macular patches, but improved again with further treatment, but is still not clear of the disease, having given the method no fair trial.

I have now just completed a year's experience of the subcutaneous method, but owing to my cases having been, with one exception, entirely out-patients or very advanced cases in a leper asylum, and to the earlier preparations in particular having given rise to considerable local pain and induration, only one patient has been under observation for the full period of a year, and eight more have been under regular treatment for six months and over. Five of the cases were of the anaesthetic type and four tubercular. The former includes the patient who has been under observation for a full year, and at the end of eight months all the light patches had disappeared and sensation had returned to them, which was complete except in the largest patch, where there is still slight loss of response to a light touch. An ulcer early healed, and he has regained power in one foot which previously showed foot-drop. During the last four months he has only received occasional injections, so as to keep him under observation, and he continues free from symptoms and appears to be practically cured. Two other cases in which the hands were affected have nearly regained the lost anaesthesia and some power, and continue to improve steadily. The fourth case showed typical claw hands, with great loss of sensation and power, and also foot-drop, as well as anaesthetic patches on the face and neck. After six months' treatment he has regained nearly all the lost sensation, except in one hand, where it is partially restored, and much of the power, being able to shave himself with a razor, and his case is most promising. The fifth anaesthetic patient improved so much that after eight months he considered himself cured and went to his country against advice. He returned after four months with some return of anaesthesia and is improving again under the intravenous treatment. The results, then, in the anaesthetic cases may be regarded as very promising.

Of the four tubercular cases one advanced case in a boy has been under treatment for ten months, during which greatly thickened and nodular ears have become smooth, and his face is now normal. Very few broken down bacilli could be found at the last microscopical examination, and he appears to be nearly free from the disease, the improvement having been most remarkable. The second case showed a number of tubercles on the chin and nose, up to half an inch in diameter, being the most advanced case I have ever seen. Here again the improvement after eight months has been great, although numerous bacilli can still be found, and progress is slow. It has been more rapid since intravenous injections have been given. Two other cases with well

marked facial affection have also greatly improved after seven and eight months' treatment respectively, but are still not well. In addition, an earlier case with affection of the face, and hard nodes on the arms containing numerous bacilli at first, after treatment for four months has lost nearly all his lesions, and no leprosy bacilli could be found in the remains of a node recently examined, so in this case the outlook is very hopeful. On the whole the tubercular cases have responded rather more slowly to the treatment than the anaesthetic ones, while I have noticed that there is greater local pain and induration at the sites of the injections in the former class. It is not improbable that intramuscular injections of sodium gynocardate would be more rapidly absorbed and more effective than subcutaneous ones, but I have not yet tested this point. Dr. Victor G. Heiser obtained his very favourable results in leprosy by intramuscular injections of chaulmoogra oil combined with camphorated oil and resorcin.

In the case of pigeons the minimal lethal dose of a 2 or 3 per cent solution of fractions B and C was 0·045 gram per kilo. Of fraction B it was 0·04 and of fraction C 0·06 per kilo., so the sodium soaps of the lower melting point acids are less toxic for pigeons than the lighter melting point ones; 4 and 5 per cent solutions are more toxic for pigeons than 2 and 3 per cent ones containing the same amount of the drug. In the case of rabbits, 0·1 gram per kilo. in a 3 per cent solution proved fatal, but 0·075 produced no effect, although it is equivalent to 78 grains in a man of 80 kilos., showing the very slight toxicity of the drug even intravenously. Lieutenant-Colonel W. D. Sutherland, I.M.S., Imperial Serologist, has very kindly tested the haemolytic action of sodium gynocardate, and he informs me that it produces a slight and interesting type of haemolysis, but one which is negligible from the practical point of view. When death takes place in pigeons it occurs within one to four minutes with convulsions. If this period is survived vomiting often occurs, but is followed by recovery. When over 1 grain had been given without any harm in rabbits of 1·500 grams, equivalent to over 50 grains in a man of 70 kilos., I felt justified in trying the drug intravenously in leprosy cases, beginning with one-tenth of a grain, and increasing by one-tenth at each successive dose, using a 2 per cent solution, and have already given up to four-fifths of a grain with no immediate effect, or any sign of toxic influence, apart from the local reactions and fever to be described later, and rarely some headache.

A 2 or 3 per cent solution may be made in distilled water (or normal saline), and after sterilization in an autoclave ½ per cent carbolic acid is added. For intravenous use the solution should be quite clear, and if any precipitate forms it should be filtered and resterilized. The veins in the forearm are distended by stretching a stout piece of rubber tubing around the upper arm, one end being put through a loop under the other, so that it can be rapidly loosened by pulling out the loop. If the veins are very small the air bag of a sphygmomanometer may be used and pumped as tight as necessary to fully distend the veins. The selected vein is punctured through the skin of the forearm or hand with a fine sharp needle, and, if there is any doubt about the vessel having been entered, a drop of blood may be drawn up in the syringe, and the whole quickly injected before clotting can take place. The pressure hand may now be released, the needle withdrawn, and collodion applied on cotton wool. Little or no irritation results if some of 2 per cent solution escapes into the tissues around the vein, so the same vessel may be used repeatedly.

The two great advantages of the intravenous over the subcutaneous method are its painlessness and greater efficiency. As nearly all my cases are Indian out-patients, over whom there is no control, some of them ceased to attend long before any material result could be expected from the subcutaneous injec-

tion on account of the pain and induration at the seat of injection. Since the intravenous route has been used no such disappointments have been experienced. Of much greater importance is the more rapid improvement which has been observed to follow the intravenous injections, which is already clearly evident. Several months are required to produce any decided improvement by the subcutaneous method, while, especially in tubercular cases, the progress is apt to be disappointingly slow even after it has started. It is far too early to say what will be the ultimate results of the intravenous medication, but my present experience is decidedly encouraging.

The most striking result is the occurrence of definite local reactions in the diseased tissues, sometimes accompanied by fever, which has been seen in several cases after from two-fifths to three-fifths of a grain of sodium gynocardate intravenously, of a degree that I have not seen occur after subcutaneous injections, although Dr. Heiser has recorded some local reaction after intramuscular injections of chaulmoogra oil, and I have seen more rapid improvement of lesions in whose neighbourhood the subcutaneous injections of gynocardates have been made. The most decided reaction was in the greatly thickened ears of a tubercular case, in whom fever occurred for three days with redness and swelling of the helix, accompanied by some serious discharge containing broken down leprosy bacilli. After the subsidence of the reaction at the end of ten days the diseased tissues were decidedly softer and less indurated than before, while nodules on the face, not showing the local reaction, were also diminished in size. In another case with very large tubercles on the face, a similar but less acute reaction was also followed by distinct improvement. In two anaesthetic cases, with greatly thickened ulnar nerves, tenderness and slight swelling appeared in the affected portions after intravenous injections, which has been followed by some return of sensation in previous anaesthetic areas of the hand. One of these patients also had fever, but had been previously subject to it. It is thus clear that intravenous injections of the drug have produced selective local reactions in the diseased tissues, which have been most evident in those patients with the greatest amount of infiltration of the tissues with leprosy bacilli, so they are most interesting and suggestive. It is too early to say whether the drug should be pushed to the extent of producing such reactions, but I am inclined at present to think they are decidedly beneficial when moderate in degree, while I have as yet seen no ill effect to follow them, although the possibility of dissemination of the bacilli in the body must not be lost sight of.

Conclusions.—I have now given about two hundred intravenous injections of gynocardate, and my experience has led me to substitute it almost entirely for the subcutaneous method. Further experience is required to ascertain how far it is advisable to push the doses, but there can be little room for doubt that even half a grain intravenously is likely to have a greater effect than four grains slowly absorbed from a subcutaneous injection. My present impression is that the intravenous method is likely to prove as great an advance on the subcutaneous one as the latter has in my hands on the oral administration of gynocardates or chaulmoogra oil. I desire, however, once more to clearly state that I make no claim to be able to cure leprosy, although I now have hopes that in time even this may eventually result from continued researches on the lines indicated in this and my previous paper on gynocardates, which are largely an extension of Dr. Heiser's important work on the treatment of leprosy by injections of chaulmoogra oil.

In conclusion, I may point out that the reactions produced by gynocardates in leprous tissues, and the apparent destruction of Hansen's bacillus, raises the very important question as to whether some such similar reaction may not be obtained in the case of another human acid-fast bacillus—namely, that of

tubercular diseases. Fortunately, this hypothesis can be tested by animal experiment, and I have already commenced a research on the subject.

Beri-Beri.—The Medical Journal of January 27, 1917, has the following:—

It is in a high degree interesting to observe that the importance which diet plays in the production, prevention, and treatment of disease is now generally recognized. This recognition is due, to some extent, to increased and more definite knowledge as to the diet necessary for nutrition and growth. It used to be thought that such diet should consist solely of proteins, carbohydrates, fats, salts, and water. This view, however, has been revised by the discovery by Funk and others that a diet, to fulfil all the conditions requisite for normal nutrition and growth, must contain also vitamines. Our knowledge of these vitamines is yet very far from complete, but enough has been ascertained by experimental research and by clinical experience to state that when these substances are lacking nutrition suffers; and that, following a diet from which the vitamines have been removed, disease supervenes. Diseases of this nature have been denominated deficiency diseases, of which one of the most typical is beri-beri.

The deficiency theory of beri-beri is strongly borne out by a careful consideration of all the circumstances. Experimentally, it has been demonstrated that by feeding fowls on polished rice a polyneuritis is brought about, a condition is produced, indeed, pathologically indistinguishable from beri-beri. Furthermore, when rice polishings are added to the rice, the birds rapidly return to the normal. It was in this manner that Funk showed that there was present in the aleurone layer of the rice grain an organic substance the absence of which caused beri-beri.

But the proofs that beri-beri is a deficiency disease are eminently conclusive from the clinical standpoint. As Marshall Findlay points out in the *Practitioner* for January, 1917, the experiments of Frazer and Stanton in Java are almost classical. In these experiments four hundred and ninety-three Japanese coolies were employed; of these, 220 were fed on white rice, the remainder on the non-polished variety, with the result that among the former class twenty cases of beri-beri developed, while among the latter there were no cases. Instance can be piled upon instance in which the continued consumption of rice deprived of its pericarp and the greater part of its aleurone layer has been followed by beri-beri; and per contra, when the deficiency has been supplied, the disease has speedily been cured.

It is probable, in fact more than likely, that there are other predisposing causes, of which the most important, according to Findlay, are the temperature and relative humidity of the atmosphere. In the Philippines, beri-beri is much more common among men than women, although the diet of both sexes is practically the same. The men, however, are largely employed in mines, in which the air is hot and moist.

In the *Lancet* of March 11, 1916, Wilcox contributed an especially able paper on beri-beri, in the course of which he dealt exhaustively with the treatment of the disease, and pointed out that the vitamine for preventing beri-beri or polyneuritis in animals is different from that which prevents scurvy. He further drew attention to the fact that yeast is a substance which is perhaps the richest in anti-beri-beri vitamine, and that egg-yolk, brain, liver, kidney, sweetbread, oatmeal, haricot beans, and peas, are all fairly rich in vitamine. In the treatment of beri-beri, first of all, when available, yeast should be given. Three or four raw eggs should be given daily. Pea soup is a valuable article of diet in the treatment of this condition, and naturally all foodstuffs which contain the largest amount of anti-beri-beri vitamine are indicated. Moreover, a valuable addition to such dietary will be fresh lemon juice.

Vitamines is the new word that is attracting so much attention in the medical world at the present time. It signifies certain qualities in food materials which are essential to normal vitality in animals and human beings, though their presence has been up to this time scarcely suspected and though they exist in quite small quantities. Whenever they are entirely absent from the diet of a particular individual he will eventually suffer from a severe painful condition of nerves and certain mutilating developments in the skin.

For instance, when rice is polished before being eaten certain materials are removed which are necessary to health, and if rice is a large factor in the diet beri-beri results. The same conditions with regard to corn lead to pellagra. Highly milled wheat is lacking in vitamines, but usually the people who eat white bread supply their vitamines from other sources. They must be healthy. Sterilized milk is always lacking in vitamines, and pasteurized milk very probably also, the heat destroying these substances.

Apparently the vitamines, as the name would imply, represent certain vital qualities in foodstuffs which may be rather easily destroyed or removed. Because of their presence a great many important foods are more healthful if taken in the natural state.

Dr. Casimir Funk, of New York, claiming to be the author of the term "vitamin," writes to the *Journal* as follows:—

> The following statements I wish to make in justification of my position as the author of the term "vitamin" as well as in refutation of some of the statements printed in your editorial entitled "What is a Vitamin?" (*The Journal*, May 6, 1916, p. 1470). I have no doubt that the sense of justice and fairness which have always impressed me in your publication will guide you to publish my letter in an early issue of *The Journal*.
>
> When early in 1911 I started the research which led to the isolation of the vitamin-fraction from various foodstuffs, my work was inspired by the remarkable results of Eijkman, Grijus and Schaumann, who were able to prove that in rice-polishings and in yeast, substances are present which protect fowls, pigeons and men against beri-beri. My task was then to find out to which chemical group these protective substances belong, and this has been successfully accomplished and described in two publications (*Lancet*, London, November 4, 1911; *Jour. Physiol.*, December 22, 1911). From reasons unknown to me, references to these two early publications are usually omitted in the literature, and the paper of Hopkins (*Jour. Physiol.*, 1912, xliv, 425) is quoted, which has been undoubtedly partially influenced by my work. It was only in 1912 (*Jour. State Med.*, June, 1912) after a careful revision of my experimental data that I introduced the term "vitamin" for these protective substances which are indispensable for life and which, judging from their chemical reactions, belong undoubtedly to the group of organic nitrogenous bases. Later on I went farther, and a few substances were isolated and analyzed which, I have reasons to believe, are chemically related to the original vitamin present in less purified fractions. I am glad to say that even now, after five years, there is not a single paper in the existing literature able to refute my experimental data. That the introduction of the term "vitamin" was justified we can judge from the quick succession of terms used to designate the same substances: torulin of Moore, oryzanin of Susuki, antiberi-berin of Tsuzuki, accessory substances of Hopkins, and finally substances A and B of McCollum. If terms could only be applied to chemically pure, fully identified substances, 90 per cent of the already existing names in the physiologic chemistry would have been discontinued (example: names of ferments, hormones, proteins, nucleins, polysaccharids, lipoids, cerebrosids, etc.).

As to the necessity of two different substances (one soluble in alcohol and the other in water) for growth of young animals, the work done in conjunction with A. B. Macallum was not able to substantiate it. Vitamin is soluble in alcohol and more so in water, but we are dealing here with one and the same substance. Our present results so far show that the beri-beri-vitamin suffices for growth of young rats; for long maintenance (over sixty days) a small supply of antiscorbutic vitamin seems necessary; otherwise scurvey with even slight rachitic symptoms occurs in rats. This condition can be avoided by using autolyzed (wet) yeast or orange juice, in difference to dried yeast, which apparently possesses no anti-scorbutic properties for rats. So far in our experiments butter was found to have no action on the growth of rats, but was found to have slight antiscorbutic effect (scurvy-vitamin carried down from milk). In order to avoid further complications and fallacies in the already complicated problem of growth in rats, we wish to test our preliminary results in all directions before final publication; but we find that some of the recent results on the growth of rats, on which your editorial is based, give not the slightest justification for the discontinuation of the term "vitamin."

In the same issue of *The Journal,* Dr. E. J. Wood deals with pellagra as being due to a deficiency of vitamin. Apparently by mistake my name was omitted as the originator of this hypothesis (*Jour. State Med.,* June, 1912; "Die Vitamine," Wiesbaden, 1914). Later on I pointed out (*Jour. Physiol.,* December, 1913; *Michen. med Wchnschr.,* 1914, No. 13) that the acute form of pellagra prevailing in the United States might be due to the use of extensively milled corn, to which conclusion Dr. Wood also arrives.

E. B. Vedder, Washington, D.C., ends an article on the relation of diet to beri-beri with the following conclusions: "As there are many conditions under which it is difficult for certain people and institutions to produce a rich and varied diet, I should like to repeat and emphasize the simple dietary rules which I have elsewhere formulated for the prevention of deficiency diseases: 1. In an institution where bread is the staple article of diet, it should be made from whole wheat flour. 2. When rice is used in any quantity, the brown undermilled, or so-called hygienic rice, should be furnished. 3. Beans, peas or other legumes, known to prevent beri-beri should be served at least once a week. Canned beans or peas should not be used. 4. Some fresh vegetables or fruit should be issued at least once a week and preferably at least twice a week. 5. Barley, a known preventive of beri-beri, should be used in all soups. 6. If corn-meal is the staple of diet it should be yellow meal or water-ground meal, that is, made from the whole grain. 7. While potatoes and fresh meat, known preventives of beri-beri and scurvy, should be served at least once a week, and preferably once daily. 8. The too exclusive use of canned goods must be carefully avoided. I am sure that the strict application of these rules will eradicate scurvy and beri-beri, and believe that they would be equally efficacious in eradicating pellagra.

Dengue. Since the original work of Graham in 1903, of Bancroft in 1905, and of Ashburn and Craig in 1907, *Culex fatigans* has generally been supposed to be the real carrier of dengue. It is true that Bancroft had apparently two successful cases of infection with *Stegomyia fasciata,* the subjects being bitten by such insects twelve and ten days after they had bitten dengue patients. Clelland, Bradley, and McDonald have recently followed up the insect carrier in an epidemic of dengue which was raging in Queensland, and had extended to some of the north coast towns of New South Wales. In a critical analysis of the previous work they point out that Graham admits that in many, perhaps in all, of his experiments *Stegomyia fasciata* was present amongst his mosquitos, and that therefore all he proved was that mosquitos can carry the disease, the variety, or varieties remaining in doubt. They further criticise Ashburn and Craig's account of transmission by *Culex fatigans.* "The successful

case," they say, "was probably one of dengue, but arguing on analogy with yellow fever, the very short mosquito 'ripening' period (less than two days) would make one accept it with reserve as originating from the mosquitos. One cannot certainly exclude the possibility of there being other sources of infection. Failing other evidence, the case is undoubtedly very suggestive of the possibility of Culex being a vector of dengue, but we can hardly understand the importance attributed to this isolated case by most textbooks." The three observers made two series of mosquito experiments. In the first, four persons were bitten by Stegomyia and two by Culex. The results were negative. There was, however, a large mortality in the mosquitos collected, and, except one individual who received ten bites, the bitings were unsatisfactory; these results are not further referred to in the paper. In the second series of experiments a collection of about 100 *Stegomyia fasciata* and 112 *Culex fatigans* was made from the district in which dengue fever had occurred; in some cases the insects were taken from the actual bedrooms where patients were lying sick with the disease. This heterogeneous collection was then given the chance of feeding upon a dengue patient, and many of both types bit freely. They were then taken to Sydney, a town free from dengue cases, and there produced the disease in four out of seven persons on whom biting experiments were made. That the disease produced was really dengue was proved by the fact that blood taken from three of the cases reproduced the disease when injected into other persons. Two cases were heavily and repeatedly bitten by *Cullex fatigans* with no result. These experiments prove that *Stegomyia fasciata* can spread the disease, but whether *Culex fatigans* also may not do so is not quite clear from the context of the paper. It is, at any rate, not absolutely disproved. The failure of *Culex fatigans* to produce the disease in the two cases mentioned may have been due to non-infection of the insects or to some insusceptibility of those bitten. More experiments are required to prove this point. It would be well to rear the mosquitos from larvae and then let them bite infected cases; this would also afford useful information as to the length of the cycle of development in the mosquito, the incubation period in man, and other interesting points. The observations, however, as they stand are very interesting and suggestive, though they do not finally settle the point as to whether one genus of mosquito or more is implicated in the spread of dengue.

Anthrax.—A fatal case of anthrax was reported March 8, 1917, as occurring at Longwood, in the vicinity of Huddersfield, England, in an employee in a woollen mill at that place. The patient was a man who had been working at a shaking machine at which dust was shaken from the wool and carried by a fan into another room. The wool originated mostly in the East Indies. The type of the disease in the case reported was internal or pulmonary anthrax. A second case occurred on the 15th instant.

Acute Anterior Poliomyelitis. (Infantile Paralysis.) D. James J. Walsh points out that this is not a new disease. If any one, he says, will got to the Philadelphia Museum he will find there the skeleton of a little prince of one of the early dynasties of Egypt who lived more than 4,000 years ago and who was crippled by infantile paralysis.

The form of crippling by this disease is so typical that Dr. John K. Mitchell, the son of Dr. S. Weir Mitchell, of Philadelphia, did not hesitate to make the diagnosis even after this length of time. Besides there are a number of pictures of the sixteenth and seventeenth centuries which present victims of infantile paralysis. Some of Murillo's pictures of the objects of charity down the centuries painted as decorations for the Hospital at Seville in Spain present some of them. Spanish painters were very realistic in their studies of such subjects, and so it is not hard to recognize the actual diseases present.

Indeed, the hardest thing in the world I know of, after years spent at the history of medicine, would be to find a new disease that we were sure was new. Tuberculosis has been traced back for more than 4,000 years; hints of cancer are to be found for as

long as the memory of man runneth. Bubonic plague has been definitely traced 1,000 or more years before Christ.

The name for appendicitis is only twenty-five years old, but the disease has been traced far beyond and is as old as mankind's present stage of anatomy. Hookworm disease is familiar only for ten or fifteen years, but Dr. Sandwirth, of Cairo, finds traces of it in Egypt more than 3,000 years ago. The examination of the arteries of mummies shows "hardening of the arteries," that latest disease to attract attention, in existence 2,000 years before Christ. Infantile paralysis in ancient Egypt then would be no surprise. Since 1905, infantile paralysis has appeared more or less frequently throughout North America, from the Atlantic to the Pacific and from Alaska to the Gulf of Mexico. As a rule the disease has occurred in isolated form; but, occasionally, there have been severe and alarming epidemics. There have been cases of anterior poliomyelitis—as infantile parlysis is scientifically known—in every state in the Union and in every large city each year for a number of years past. Epidemics have occurred in New York in 1907, in Minnesota and Nebraska in 1908-1909, in Iowa in 1910, in Ohio and Kentucky in 1911, in New York State in 1912. The disease appeared in epidemic form in the city of New York during the early part of last summer (1916).

Since the early summer of 1916 there have been 24,000 cases of infantile paralysis in the United States. Eighteen thousand of these were in New York City and the adjacent territory, in the States of New York, New Jersey, Pennsylvania, Connecticut and Massachusetts, the Borough of Brooklyn being the first to become infected.

In the Montreal district, from October 16 to 25, there have been twelve cases of infantile paralysis in Westmount, and only one since the last-mentioned date. In Verdun, there have been only two cases before the 24th of October. In Montreal West, they had two cases on the 25th of October. In Lachine, there was only one case on the 26th. In Ville Saint-Pierre, they have had three cases previous to the 24th of October. In Outremont, there has not been a single case reported. And in Montreal where there had been eighty-five cases from January until the 26th of October, we have had since this last date three cases on the 27th, two cases on the 28th, two cases on the 30th, two cases on the 31st, one case on November 2, one case on the 3rd, two cases on the 4th and not a single one on the 29th of October, the 1st, 5th, 6th, 7th, 8th and 9th of November.

Infantile paralysis is an acute, infectious disease, usually attacking children, ushered in, as a rule, with the symptons common to other acute infections and resulting in partial paralysis which comes early in its course. It is caused by the invasion of the brain and spinal cord by a minute germ or organism.

The disease is not as infectious as scarlet fever or diphtheria. In most communities only a very small percentage of exposed persons acquire it. This percentage varies, however, and is usually higher in rural districts than in larger cities. Under certain conditions, which we do not clearly understand, the disease becomes very infectious and epidemics result.

The apparent difference in infectiousness in city and country has been explained by these facts: (1) Only a small percentage of people are susceptible to infantile paralysis. (2) When the disease appears in a community, those persons who are exposed and not immune, acquire the disease and, if they survive the attack, are doubtless immune to a later attack. (3) Infantile paralysis is present more or less constantly in large cities so that exposure of susceptible persons is much more likely than in smaller centres of population. It is this lesser likelihood of exposure of the susceptible person in the smaller and more isolated community which is said to be responsible for the greater percentage of infections and also for the larger number of adults affected in rural epidemics.

Age is an important factor in the disease. As a rule it attacks those under 5 years of age. It is stated that children under 5 constitute but 10 per cent of the total population; but that they furnish 50 to 90 per cent of the cases of infantile paralysis.

In some epidemics, children from 5 to 15 years of age seem as susceptible as those younger.

Not over 10 per cent of cases are among adults.

Practically all epidemics of infantile paralysis and most isolated cases occur during the summer season—between the months of May and November—and there is said to be some connection between the disease and hot, dry weather. On this account, the disease is thought by some authorities on the subject to be spread by dust.

It is interesting to note that the epidemics at Buffalo and Cincinnati occurred during wet weather.

As a rule the disease in the United States has been largely confined to the Northern and North Central states and the chief epidemics have occurred in these sections. Virginia, Mississippi and some other southern states have not entirely escaped outbreaks.

The disease is transmitted, in all probability, by the secretions of the patient, dried or otherwise, coming in contact with the nasal passages or throat of the susceptible person. Experimentally the disease has been transmitted through the digestive tract, but it is not likely that this occurs often.

The fact that the virus so tenaciously resists drying makes it reasonable to assume that the disease is carried in infected dust.

At the present time, it seems that the chief means of transmission are kissing, sneezing and coughing, the two latter throwing the virus into the air whence it is directly carried to the noses and throats of others. Many cases are transmitted by mothers, who, after caring for the noses and throats of children who may be carriers of infection, carry the virus to other children.

Lower animals, birds and fowls very probably suffer from this infection; but it is not likely that man acquires infection in very many instances from these animals. However, poultry, pigs, dogs and cats are still somewhat under suspicion.

In certain cases it has been practically proven that flies carry infection; but this is not the common means of transmission. At one time it was believed that the disease could be transmitted by biting insects carrying the virus in the blood taken from the patient. This is not proven nor have the germs been shown to be present in the blood.

Incidentally, the character of living conditions seem to have little to do with the development of the disease. It develops in clean homes as well as in those which are filthy; and attacks the healthy child as well as it does the weakling.

In recent epidemics it has been possible to prove contact with the sick in only about 25 per cent of cases. This is doubtless due to the large number of undiagnosed cases and the healthy virus carriers.

With regard to prevention.—according to Dr. Simon Flexner, "Protection to the public can be best secured through the discovery and isolation of those ill of the disease, and the sanitary control of those persons who have associated with the sick and whose business calls them away from home. Both these conditions can be secured without too great interference with the comforts and the rights of individuals."

The essential facts upon which our preventive measures rest are:—

(1) Infantile paralysis is contagious.

(2) The convalescent patient may carry the organisms of the disease for weeks or months.

(3) Healthy persons, exposed to infection, may carry organisms in their throats and nasal passages for a long period of time.

(4) The infectious material comes largely from the nose and throat; but it is also found in the intestinal passages and may be present in the urine and sweat.

(5) Children are particularly susceptible; but adults are not necessarily immune.

(6) Infection probably takes place through the mucous membranes of the nose and throat.

(7) The exact means of transmission is uncertain. The disease has been attributed to dust infection, to fly-borne infection, to food infection and to direct contact. It is impossible at this time to say which, if any, of these theories is correct.

In view of this uncertainty, preventive measures to be effective must be very general in character.

All persons suffering from the disease must be rigidly quarantined for a period of at least five weeks.

There should also be quarantine or rigid observation of all persons who have been in contact with patients suffering from the disease.

There should be careful destruction of all discharges from infected persons and of all things contaminated with such discharges. After the death, removal or recovery of the patient, the premises should be thoroughly disinfected.

The virus of infantile paralysis is destroyed by bright sunlight. Hence the quarters occupied by the patient and the rest of the house should permit free access of sunlight at all times. Disinfection of rooms and contents should be followed by thorough sunning.

The public should be warned that convalescent patients may carry the virus of the disease for considerable and uncertain periods after complete recovery.

At the annual meeting of the American Public Health Association held in Cincinnati, Ohio, October 24-27 last, it was moved by Dr. E. P. Lachapelle of Montreal, seconded by Dr. Frederick Montizambert, of Ottawa:—

> That in view of the fact that infantile paralysis has existed for several months and still exists in the United States and Canada, taking on in some localities an epidemic character; that considerable anxiety is expressed by the public generally, and that the public, the physicians and the health authorities may well expect an authoritative statement upon the subject from this association in annual convention;
>
> Be it resolved, that the President be forthwith authorized to appoint a small committee of specialists and of those who have had experience of the disease, with instructions to meet immediately and to prepare a report of the present actual knowledge of the cause of the disease, the manner and agents by which it is spread, the best methods of treatment, and the best preventive measures;
>
> And that this committee submit its report before the close of this annual meeting; and that such report be given to the public immediately.

The resolution committee of the association unanimously approved of the above resolution, and, in accordance with it, the president, John F. Anderson, appointed the following special committee: Dr. Haven Emerson, Commissioner of Health, New York City; Dr. Wade Frost, United States Public Health Service, Cincinnati, O.; Dr. A. J. Chesley, Epidemiologist, Minnesota State Board of Health.

Committee Report.—The specific cause of poliomyelitis is a micro-organism, a so-called virus, which may be positively identified at present only by its production of poliomyelitis in monkeys experimentally inoculated. Such experiments have shown this virus to be present not only in the nervous tissues and certain other organs of persons who have died of poliomyelitis, but also in the nose, mouth and bowel discharges of patients suffering from the disease. It has been proved by similar experiments that healthy associates of poliomyelitis cases may harbour the virus in their noses and throats.

These experiments, together with the fact that monkeys have been infected by direct application of the virus to the mucous membrane of the nose and by feeding of

the virus, are strong evidence that in nature infection may be directly spread from person to person.

Observations on the occurrence of the disease might seem at first thought to be inconsistent with this conception, since contact between recognized cases can seldom be traced. However, this may be adequately explained by the lack of means for detecting mild non-paralytic cases and by the belief that healthy carriers of the virus and undetected cases are considerably more numerous than frankly paralyzed cases.

Many facts, such as the seasonal incidence and rural prevalence of the disease have seemed to indicate that some insect or animal host, as yet unrecognized, may be a necessary factor in the spread of poliomyelitis, but specific evidence to this effect is lacking, and the weight of present opinion inclines to the view that poliomyelitis is exclusively a human disease and is spread by personal contact, whatever other causes may be found to contribute to its spread. In personal contact we mean to include all the usual opportunities, direct or indirect, immediate or intermediate, for the transference of body discharges from person to person, having in mind as a possibilty that the infection may occur through contaminated food.

The incubation period has not been definitely established in human beings. The information at hand indicates that it is less than two weeks, and probably in the great majority of cases between three and eight days.

If the foregoing conception of the disease is correct, it is obvious that effective preventive measures, approaching complete control, are impracticable, because isolation of recognized cases of the disease and restraint upon their immediate associates must fail to prevent the spread of infection by unrecognized cases and carriers. These difficulties would appear to be inherent in the nature of the disease. Nevertheless, we may hope for the development of more thorough knowledge which will permit of more effective control of the disease than is now practicable. Of first importance is the more general recognition by practitioners of non-paralytic cases through clinical observation and laboratory procedures. Lumbar puncture has been shown to offer valuable aid in diagnosis, and a more general use of this test is to be encouraged, since it not only facilitates accurate and early diagnosis, but in many cases affords symptomatic relief as a therapeutic procedure. Without undertaking to predict the future progress of research, we may hope for certain possible developments which may afford far more effective control of the disease, with substantial relief from many inconveniences at present inevitable. Among these possibilities we would include a practical test for the detection of all clinical types and carriers, a simple and reliable test for distinguishing between susceptible and insusceptible persons, and means of conferring artificial immunity against poliomyelitis.

At present our information demands the employment of the following administrative procedures in attempting to control the disease:—

1. The requirement that all recognized and suspected cases be promptly reported.
2. Isolation of patients in screened premises. The duration of infectivity being unknown, the period of isolation must necessarily be arbitrary. Six weeks has been recommended by the Conference of State and Territorial Health Officers with the Surgeon General of the Public Health Service as sufficient, and this period has been generally accepted throughout the United States.
3. Disinfection of all body discharges.
4. Restriction of the movements of intimate associates of the patient as far as practicable. This should include at least exclusion of the children of the family from schools and other gatherings.
5. Protection of the children as far as possible from contact with other children or with the general public during epidemics.
6. Observation of contacts for two weeks after the last exposure.

There is no specific treatment of established value in poliomyelitis. During the persistence of the acute symptoms of the disease the important principles of treatment

are rest in bed, symptomatic relief, and passive support for the prevention of deformities. Active measures during this stage are not only useless but are apt to cause serious and often permanent injury. Hospitalization of patients where possible should be encouraged. The best chances of recovery from residual paralysis demand skilful after-care, often long continued, and always under the direction of a physician familiar with the neurological and orthopedic principles of treatment. The provision of such after-care often becomes a community problem, demanding the co-operation of all available agencies, social and professional.

In view of the large number of cases of this disease in the neighbouring states instructions were issued by you requiring every person under sixteen years old desiring to enter over the land frontier, coming from any one of the affected group of states to produce a certificate properly signed stating that the bearer had not the disease, nor had been in contact with any one who had. And the certificate had to be issued not longer than 24 hours before departure. Through the kindness of the Immigration and Customs Services their officers examined and checked these certificates.

This inspection was put on in August and taken off at midnight of 30th November. As far as the United States Public Health Service was concerned the epidemic in New York was officially declared to be at an end on the 5th October.

The inspection of children in interstate traffic was discontinued and the quarantine lifted. Government physicians who had been on duty in that city were directed to report to their regular stations in various parts of the country.

In Philadelphia, quarantine was raised on October 1; and in Baltimore on November 1.

Opening the new Yorkville Forum, at the Lyceum, Eighty-sixth street and Third avenue, Dr. Haven Emerson, Health Commissioner, expressed his belief that there will be no epidemic of infantile paralysis next summer. At the same time he made it clear to the two hundred persons present that common rules for health must be obeyed strictly as a precaution against the disease. He also explained how infantile paralysis could be prevented from spreading.

"Last summer," said Dr. Emerson, "there were 2,400 deaths from infantile paralysis, but we do not expect an epidemic of the disease this summer. The fear of the disease last summer led people to be more careful about their health and continued precautions in this direction will be very helpful as a means of preventing infantile paralysis.

Keep the sick from the well. There are many mothers and fathers who fail to call a physician when their children get sick and allow them to remain ill without professional medical aid for a week or more. By that time the disease is in an advanced stage. Had the parents called in a physician at the beginning a different story might be told.

Since last December there have been reported on an average each month until now two or three cases of infantile paralysis. But the disease is more prevalent in the summer, and we expected to have more cases during that time. There is no reason to believe, however, that there will be an epidemic of infantile paralysis next summer.

The New York Herald of 3rd December last has the following as a special despatch:—

> In the laboratories of the famous Mayo Brothers' clinc at Rochester, Minn., a micro-organism has been discovered which is believed by investigators in pathology to be the causative agent of infantile paralysis, which last summer killed or crippled, it is said, nearly twenty thousand American babies.
>
> Dr. E. C. Rosenow, who is in charge of the experiments, will not yet assert positively that the germ which he and his associates, Dr. E. B. Towne, of Boston, and Dr. G. W. Wheeler, of New York, have succeeded in isolating, is the germ

of infantile paralysis, but in what he terms a "preliminary note," presented to the State Medical Society, it is shown that innumerable experiments during the last few months all point in the same direction.

If it be true that the agent of the disease has thus been found—and there is no real doubt in the minds of the scientists acquainted with the experiments that this has been done—then half of one of the greatest battles in modern medical science already has been won. There remains the important task of developing a serum or vaccine, or perhaps both, with which immunity may be established in human beings. Before another summer the world may hear that infantile paralysis has been definitely relegated to the category of such diseases as diphtheria and small-pox and other readily controlled diseases. With the memory of last summer's horror still fresh in the public mind, the full importance of the discovery cannot be overlooked.

Because of the high hopes which the discovery of some mistake or broken link in the present chain of scientific evidence would dash, those interested in the experiments at Rochester are especially chary of making announcements. Nevertheless, Dr. Rosenow's guarded report cannot but have the effect of creating intense public interest in the outcome of experimentation with curative vaccines and serums. It is known that a quantity of both already has been prepared and is being employed upon animals at the Mayo laboratories.

In the "preliminary note," Drs. Rosenow, Towne and Wheeler give the results of their study of the epidemic which was worst last summer in New York. Dr. Rosenow passed more than a month in the thick of the fight waged against the disease by the New York health authorities and the experiments outlined were based upon more than fifty acute cases of the disease both in New York and Rochester.

Inoculation of rabbits, dogs and monkeys with the germ taken from human beings has been followed in every case by the onset of what is called characteristic poliomyelitis, or infantile paralysis. The symptoms produced in the animals are in every respect the same as those witnessed in human beings. Cultures made from dogs and rabbits dead of the disease, when injected into other dogs and rabbits have produced instant and fatal attacks of infantile paralysis.

It is no secret that since the isolation of the germ of infantile paralysis many experiments have been made at Rochester looking to the perfection of a vaccine or serum for its prevention. It should be added, however, that the cure, even if found, would not restore the use of their crippled limbs to children who have been victims of the disease.

More iniquities of the Rat.—The *British Medical Journal* of February 17 last adds another indictment against the rat and its fleas as the carriers of the infective agent in Weil's disease. And Dr. Mark Richardson, formerly Secretary of the Massachusetts State Board of Health has added still another to the list of their enormities by advancing the theory that the rat and its fleas may be responsible for the spread of infantile paralysis.

The British Medical Journal says:—

> Every man's hand is against the rat. In political circles the rat's character is held to explain the moral turpitude that leads from time to time to defections from the party. Women, it is credibly reported, will fly from the rat with all the alacrity they display in escaping from the dangerous proximity of the domestic mouse. Indeed, one would probably be well within the truth in stating that the rat's only real friend among human beings is the schoolboy, who is apt to cherish white specimens of the race as pets. From the epidemiological point of view rats have had a thoroughly bad name of late years, if only as the presumedly involuntary carriers of fleas infected with the bacillus of bubonic

plague, a disease that kills its tens of thousands every year. Rats, too, are the carriers of infection in the rare disease known by the name of "rat-bite fever," of which over eighty cases have been described in Europe, Asia, and America, during the last twenty years. It is of interest to note, while this fever is under discussion, that certain Japanese investigators have quite recently reported that, after investigating two cases of the disease, they have identified a new spirochaete, which they name the *S. morsus muris,* as the cause of rat-bite fever in Japan. This organism is found in about 3 per cent of Japanese house rats, and, a matter of importance from the point of view of treatment, it is most markedly affected by salvarsan. It is true that other scientists have found quite other organisms (aspergilli, telosporidia, diplococci, bacilli) to be the cause of rat-bite fever, and in the *British Medical Journal* of February 19, 1916 (p. 285), will be found an account of Dr. F. G. Blake's confirmation of Schottmüller's discovery that the causal organism of the fever is a streptothrix. But it is pointed out that rat bites may be quite capable of infecting human beings with other diseases as well as with true "rat-bite fever," and that the cases recorded by Schottmüller and Blake differed in several important particulars from rat-bite fever as it occurs in Japan. From the experimental point of view, rat-bite fever may be transmitted from rats to guinea-pigs, as was proved by Ogata in 1911. This experimental rat-bite fever has been investigated by three bacteriologists at Tokyo, and they claim to have proved that the disease is due to a spirochaete that under the microscope differs in form from that described by the four Japanese investigators mentioned above, but resembles it in being sensitive to the action of arsenical compounds. About ten rats out of some forty employed with success in these experiments were found to be carriers of the spirochaete of rat-bite fever.

But this does not complete the tale of the rat's nosological infamy. There is now good reason for believing that rats may also be the carriers of the infecting agent in Weil's disease. As may be seen by reference to any medical textbook, some thirty years ago Weil described an epidemic form of infectious jaundice that has since been known by his name, and is now also known as spirochaetosis icterohaemorrhagica. A variety of jaundice that is similar, if not identical, occurs in Japan; and, as was related in the *British Medical Journal* of April 1, 1916 (p. 491) certain Japanese medical men identified in 1915 a new spirochaete, the *S. icterohaemorrhagiae,* as the organism giving rise to this variety of epidemic jaundice. The identical organism has been isolated from cases of infectious jaundice in France, in Italy, and in the lands of the Central Powers. An account of the occurrence of the same disease in the army in Flanders, written by Captain Adrian Stokes, R.A.M.C. (T.), and Captain J. A. Ryle, R.A.M.C. (S.R.), will be found in the *British Medical Journal* of September 23, 1916 (p. 413). The disease is clearly widespread at the present time, therefore. It is also highly infectious, and has even been caught in a bacteriological laboratory by a very careful worker engaged in transmitting the virus from one experimental animal—a guinea-pig—to another. The pathogenic spirochaetes are excreted in the urine and faeces of the patients, a fact which may indicate the common routes of infection in Weil's disease, and points out the paths along which general prophylaxis against its spread must be sought. But prophylaxis by both active and passive immunization is also possible. A recent paper on the subject by the Japanese doctors Ido, Hoki, Ito, and Wani, establishes the fact that guinea-pigs can be protected against infection by the specific spirochaete in two ways—either by inoculation with cultures of the organism, or by the injection of immune serum from other animals already protected in this manner. In the case of man, only passive immunization has yet

been attempted, by the use of serum derived from a horse protected against spirochaetosis icterohaemorrhagica through vaccination with preparations of the spirochaete. Although no case has occurred in which the efficacy of this immune serum could actually be put to the test, the authors are of opinion that it does confer on man a partial immunity to the disease; this is supposed to last for from six months to a year. They also give evidence to show that in Japan both the house rats and the brown ditch rats are often carriers of the spirochaete which may be found in their kidneys, as was pointed out in 1916 by Miyajima. The importance of this observation is indicated by the fact that cooks and butchers seem particularly prone to this form of acute infectious jaundice; indeed, two of the fifty-five patients treated by the authors had been bitten by rats from seven to nine days before they developed the disease. Probably the infection is transmitted from rats to man by means of the rat's urine, directly or indirectly, in most cases. Nearly 40 per cent of the rats in the city and coal mines of Kyushu were found to carry highly virulent pathogenic spirochaetes in their kidneys.

A full account of the serum treatment of Weil's disease, so far as it has been tried at present, has been published by Drs. Inada, Ido, Hoki, Ito, and Wani. At first the serum was obtained from goats immunized by inoculation with the spirochaete. This was in August, 1915; later the serum obtained from patients convalescent from the disease was employed, and later still the serum from actively immunized horses. The serum acts mainly by destroying the spirochaetes; technically speaking it is spirochaetolytic and spirochaetocidal, and that it has any antitoxic effect has not yet been demonstrated. It should be given subcutaneously or intravenously in large doses (up to 60 c.cm.) as early as possible in the disease. In all, thirty-five patients were treated, of whom five died of the disease, though one was moribund on admission to hospital. These figures show a mortality of about 11 per cent. As a rule, the mortality from Weil's disease in Japan appears to be from 30 to 50 per cent. Such results as these show that the serum treatment is at any rate promising; but the authors do not claim more for it at present, considering that the number of cases treated is not large enough to justify the drawing of any more definite conclusions. They find that the serum destroys the spirochaetes contained in the circulating blood, promotes the development of antibodies, and lessens the number of the organisms in the patients' viscera, where they are already numerous by the fifth day of the disease.

The following facts supporting the theory that infantile paralysis is transferred by rodents, insects, or both are offered by Richardson. (1) Summer incidence of the disease; (2) the resemblance of the disease in its epidemiology to malaria and yellow fever has been noted more than once; (3) the positive results of Rosenau and also of Anderson and Frost, together with the successful experience of Flexner with the bedbug. That the bedbug might be the intermediate link in the chain seemed to Richardson highly improbable in view of the fact that infantile paralysis attacks with almost equal frequency all strata of society. The possible relation of the rat to infantile paralysis was first brought to Richardson's attention in 1910 through an observation made by Dr. Charles E. Simpson, state inspector of health. In investigating an epidemic of the disease, Dr. Simpson observed the fact that many rats, whose homes had been in a town dump, were compelled, because of a fire in that dump, to seek refuge in the neighbouring houses. In these houses infantile paralysis seemed to be unduly prevalent. Another experience pointing in the same direction occurred in a small country neighbourhood occupied as a summer colony by a number of city residents. The only immediate unusual factor to

be assigned for this epidemic was the removal, from one situation to another, of an old barn. The barn cellar was dug up and improved, and during this operation, the affected children played in the excavation. The inference is, of course, that many old rat holes were destroyed and that the accumulation of years in the way of rat disease and fleas may have been distributed broadcast to the outside world. A third observation, but a rare one, was made in a Massachusetts city where, in an infected district, many rats were said to have been found dead. In another city a muddy river and its tributaries honeycombed to a greater or less extent the municipality. The location of the cases of infantile paralysis seemed to have a remarkable relation to this stream and its branches. Indeed, the whole Massachusetts experience seems to indicate that the disease has been endemic along its rivers, most of which are polluted by sewage to a greater or less extent. The possible association of the water rat was thus indicated.

The great increase in poliomyelitis during the last twenty-five years has been explained as due to great increase in facility of transportation all over the world, so that infinitely increased human contact has become possible. The same argument would apply, however, to the transfer of infected rats from one locality to another. Indeed such transfer in freight cars and ships carrying grain, cattle, pigs, etc., must be common. The relation to the railroads of cases of infantile paralysis has been noticed by a number of observers.

Nothing could be more probable than that children living near railroads should play in rat infected freight cars. Infected rats furthermore, if dropped from freight cars, would necessarily seek their food in the immediate neighbourhood. In the transfer of the infection from the rat to man, the agency of the flea is assumed, although the possible contamination of food by rodent excretions might well be considered. The insect transfer might be simply mechanical or it might require a preliminary cycle of development of the virus in the flea. Furthermore, the possible role of cats, dogs and other animals, or even human beings, as carriers of infected fleas, would be apparent. Moreover, in grossly unsanitary surroundings, the fleas might carry infection from one child to another directly. These theories, Richardson says, explain better than any other hypothesis submitted the epidemiologic facts as observed in infantile paralysis.

Dr. Richardson states that Rosenau has recently produced paralytic phenomena in rats by inoculation of the virus of infantile paralysis. Extended experimental investigations will be necessary to determine the value which should be attached to his theory, but Dr. Richardson is, we think, correct in saying that it is not easy to make the theory that it is conveyed by human contact fit all the facts.

According to the Federal Public Health Service, it costs $1.82 to board a healthy rat a year, says the Minneapolis *Journal*. That is at the rate of half a cent a day. The rat is voracious and not over-particular about his food, taking the same wherever he can find it. The total annual board bill of the rat tribe in the United States must therefore be some hundreds of millions of dollars.

In return for this liberal expenditure in his behalf Monsieur Rat does nothing whatever that is useful, and much that is positively harmful. His worst disservice is playing host to the fleas that spread the bubonic plague, but he spreads other disease germs as well. From an economic standpoint he is a wastrel, and from a health standpoint a plague-carrier.

It has been generally accepted that rat population of a country is about equal to the human in numbers. Taking the population of Canada at seven and a half millions at the above cited cost of the board of a rat, our total annual board bill of the rat tribe would amount to $13,650,000.

Anti-rat Regulations.—To limit or prevent the landing of infected rats from incoming vessels arriving from Liverpool after the discovery of plague-infected rats there certain precautions now enjoined by you at our Atlantic ports. These included.

The breasting out of the vessel from the pier for not less than six feet.

The placing on every hawser between the vessel and the pier of a funnel or disc of metal not less than three feet in diameter and not more than three feet from the vessel.

The reduction of the gangways to a minimum by day, and their guarding by quartermasters. At night all gangways to be withdrawn, or if one be essential, that it be lighted as well as guarded.

As soon as an incoming vessel has received her quarantine clearance she passes from your jurisdiction and comes under that of the Minister of Marine. The Marine Department kindly consented to have your views in this matter carried out, and they issued instructions to all their harbour-masters at all the Atlantic ports to have these regulations enforced.

Cerebro-spinal meningitis.—Having received information from the Militia Department that some soldiers returning to Canada via St. John, N.B., this month were supposed to have been in contact with cases of cerebro spinal meningitis before embarking at Liverpool, these men were detained at quarantine for bacteriological examination. These proved negative in all cases.

International Frontier Inspection.—No frontier quarantine inspection has been required this year, with the exception of the precautions against the introduction of infantile paralysis already described.

Transfer of Baltimore Quarantine.—In June last the *Medical Record* announced that this State controlled station was in course of being transferred to the United States Public Health Service. This completes the transfer of State quarantines to the United States Federal Government.

Circulars.—Circular letters were issued from time to time to your different officers, calling their attention to the various matters during the year connected with the appearances of epidemic diseases abroad.

Buletins, etc., received.—The weekly Public Health Reports of the United States Public Health Service have been regularly received and are of great value, as are also the monthly bulletin from provincial, state, and municipal boards of health in Canada, the United States, and other countries. The bulletins of the International Office of Public Health, Paris, and of the Sleeping Sickness Bureau, London, have been regularly received throughout the year, and in both cases spare copies have been distributed to the provincial boards of health.

Official visits, inspections, etc.—On the 23rd June I left, by your instructions to inspect on the Atlantic seaboard, inspected at Grosse Isle, Que., the leper lazaretto at Tracadie, N.B.; the quarantine stations at Chatham and St. John, N.B.; Digby, Halifax, Sydney and Louisburg, N.S.; and Charlottetown and Summerside, P.E.I.

On August 17, I left for the Pacific coast. I inspected at Vancouver, Victoria, William Head, and Prince Rupert, and the leper lazaretto at Darcy Island.

No annual meeting of the Canadian Medical Association was held this year, owing to the absence of so many medical men on military duty.

On September 12 and 13 I attended a Joint Congress of the Canadian Public Health Association, and the Canadian Association for the Prevention of Tuberculosis at Quebec, Que.

On October 24 and 27 I attended the annual meeting of the American Public Health Association, which includes the United States, Canada, Mexico and Cuba, at Cincinnati, Ohio.

Changes in Medical Staff.—Halifax, N.S., D. J. V. Graham has replaced Dr. Blackett as substitute for Dr. V. W. Mackay, overseas. St. John, N.B., Dr. Hagerty again took winter duty for Dr. Warwick, overseas. William Head, B.C., no successor yet for Dr. Chester P. Brown. Prince Rupert, B.C., Dr. John Code substitutes for Dr. Tremayne, overseas.

Stations, etc.—Grosse Isle, Que.—Vessels inspected 355, being an increase of 10 over last year, and at the advanced inspection Station at Rimouski, Que., 28, being a decrease of 12 since last year. Persons inspected at Grosse Isle 32,281, at Rimouski 16,707. A total of 48,988, a decrease of 4,348 since last year, of 162,329 as compared with the season of 1913, and of 244,580 as compared with 1914.

Infectious disease occurred on 24 vessels. The admissions to hospital were 60. One death from diptheria. In 1913 there were 947 admissions, and in 1914, 1,720. These figures are liable to be equalled or surpassed after the war.

By order of the Department dated August 3, 1916, all troop ships and Admiralty transports were exempted from quarantine inspection when in a healthy condition.

Owing to the decrease this year in the number of mail steamers coming up the St. Lawrence, you were satisfied from the 1st of July, with two inspecting officers instead of three. Drs. Lepage and Lord continued on duty for the season.

Halifax, N.S.—Vessels inspected 402, being 128 more than last year. Persons inspected 29,042, 18,347 less than last year.

The admissions to hospital were eleven.

St. John, N.B.—Vessels inspected 267, being 5 less than last year. Persons inspected 30,882, being an increase of 7,005 over last year. Admissions to hospital seven.

Chatham, N.B.—Vessels inspected 120. Persons inspected 1,149. No quarantinable disease.

Digby, N.S.—No vessels for quarantine inspection.

Sydney, N.S.—Vessels inspected 276, being 28 more than last year. Persons inspected 70,979, being within 54 of last years figure. Only two cases of sickness; one case of measles, one case enterie fever.

Louisburg, N. S.—Vessels inspected 78, as against 112 last year. Persons inspected 2,119, last year 2,985.

Charlottetown, P.E.I.—Vessels inspected 14. Persons inspected 114. No case of quarantinable disease was found on these vessels. The charge of two cases of measles in March off the Car Ferry belonging to the Marine Department was assumed as a help to that Department. As our quarantine hospital was not accessible at that time of year, they were treated at a private house. All expenses were assumed by this Department. In May a case of diphtheria in a member of the crew of the same Car Ferry was admitted to and treated in our quarantine hospital.

Summerside, P.E.I.—No vessels for quarantine inspection.

William Head, B.C.—Vessels inspected 230. Persons inspected 44,679. This shows an increase of 57 in vessels inspected, and of 17,899 in persons inspected as contrasted with last year. Smallpox was brought to the station by two steamships. Other minor diseases were amoebic dysentery varicella, and mumps.

Total admissions to hospital fifteen.

Owing to an outbreak of cholera in Japan from the beginning of October all storage passengers from the Orient were detained for the bacteriological examination of their secreta. A total of 1,087 persons were so examined. No cholera carrier was found.

On the 24th February last the threatening Nod so far passed that these examinations were from that date suspended. Similar action was taken at the same time by the public health authorities of the contiguous ports of the United States.

Victoria, B.C.—Vessels inspected six. Persons inspected 1,005. No quarantinable disease.

Vancouver, B.C.—No vessels inspected.

Prince Rupert, B.C.—No vessels inspected. A fresh water supply is urgently required. Also a disinfection building. There is, as yet, no provision made for handling an infected vessel at this port.

Tracadie Leper Lazaretto.—There are at present only thirteen patients. Six males and seven females. Only about half the number present a few years ago. Two deaths during the year. No admissions. Those of the patients who are being treated by intra-muscular injections of Chaulmoogra Oil combined with camphor and resorcin show continued signs of improvement.

The devotion and care given to the patients by the nursing religious sisters continue to be above all praise.

Darcy Island Leper Lazaretto, B.C.—Five lepers have been admitted during the year. One a Japanese has been deported. One a Russian after three months observation has been released under conditions of periodic examination as not being a menace to the public health. Two Chinese, and one, a Chilean-Kanaka, remain under treatment and care.

The sudden death occurred on April 19 last of A. E. Wilson, the orderly and caretaker at Darcy Island. He had been for years a faithful and valuable official, and his death is a loss to the service.

Public Works Health Act.—Mr. C. A. L. Fisher, your inspector for Eastern Canada states that the public works in his territory have been composed of railway, canal and mountain tunnel construction. He reports the year as having been exceptional in the non-appearance of infectious diseases amongst the men employed, with the exception of half a dozen cases of enteric fever (mostly mild) on the Welland Ship Canal works.

Mr. Fisher on his several tours of inspection found the medical service fully satisfactory, and the sleeping quarters and boarding of the men employed fully equal to the good conditions of previous years.

Dr. A. E. Clendenan your inspector for Western Canada points out that the volume of work has been very materially lessened with the duration of the war.

The Grand Trunk Pacific has ceased construction. The Canadian Pacific have no large undertakings since the completion of the Rogers Pass Tunnel. The Canadian Northern has only diminished numbers of employees on urgent lines. On the other hand the Edmonton, Dunvegan and British Columbia railway with its branch the Canada Central, The Hudson Bay railway, Esquimalt harbour on the Pacific ocean, and Nelson harbour on Hudson bay are all being pushed with the vigour of former years.

The medical service has been such that no complaints have been made by employees.

Not one epidemic of infectious disease has occurred during the year. Here and there individual cases cropped up but were so treated as to prevent their being a menace to others.

I have the honour to be, sir,

Your obedient servant,

F. MONTIZAMBERT, M.D.

Director-General of Public Health.

MISCELLANEOUS.

APPENDIX No. 2.

EXHIBITIONS.

San Diego, California, March 31 1917.

Sir,—I have the honour to submit the following report of the operation of the Exhibition Branch of your Department for the fiscal year ending March 31, 1917.

During the whole fiscal year of 1916-17, our exhibit has been one of the main features of the Panama-California International Exposition, held at San Diego, California. This exposition opened its doors to the public on the 18th February, 1916. Our participation was then quite ready, the Canadian Building having in fact been opened to the visitors three days before the official opening, viz., on the 16th of February.

Our display is installed in one of the finest buildings of the exposition which has been placed at our disposal by the management, free of charge. It occupies a most advantageous situation on the main thoroughfare of the exposition, so that no visitors to the grounds can fail it to see it.

The Canadian exhibit is composed of the natural products of the country. It includes the products of agriculture, horticulture and forestry, as well as important collections of minerals and of fish and game specimens. The water-powers of Canada are also shown in relief maps. The progress of colonization in our Country is fully illustrated by means of large panoramas and other pictures. Our transportation systems are well advertised, especially those affording facilities for the handling of the crops in the Canadian Northwest. Our display of fresh and bottled fruit is particularly effective, and our mineral exhibit is receiving the highest commendations from all.

During the whole period of the exposition the weather was fine and the influx of tourists at San Diego very important. Large numbers of people visited the exposition, and very few of them, if any, failed to see our exhibit.

One of the especially gratifying features of our participation was the visit of several high officials of the various United States transcontinental railroads, who were all very complimentary in their praise of our exhibit as a priceless advertisement for Canada and our three Canadian transcontinental railways.

Numerous inquiries about the wheat lands of the Canadian Northwest were received by the staff, and also by the representative of the Department of the Interior who had his quarters in the Canadian Building. The interest created regarding Canada in this part of the country by our exposition was very noticeable and has been demonstrated in a practical manner by the numerous bookings for the Canadian West that have been made continuously during the year.

The Panama-California International Exposition was scheduled to close its doors on the 31st of December, 1916; but in view of the fact that the attendance at the end of the month of December was still very satisfactory, and considering also that during the winter months the tourists are very numerous in San Diego as well as in the whole of southern California, the management of the exposition decided to prolong the exposition during three months, that is, until the end of March, 1917. The expectations of the committee in that respect were fully realized, as the success of the exposition continued unabated until the end of the three months' extension.

We received an extensive and very complimentary publicity from all the newspapers of this part of the country, and the management of the exposition have been

very appreciative in their remarks regarding the value of our exhibit as a drawing card. And I am glad to state that, in fact, the Canadian exhibit has achieved here a great success, and of a kind that will entail the best practical and beneficial results for Canada.

The whole respectfully submitted.

WM. HUTCHISON,
Commissioner.

The Honourable
The Minister of Agriculture of Canada,
Ottawa, Ont., Canada.

DEPARTMENT OF AGRICULTURE

CANADA

REPORT

OF THE

VETERINARY DIRECTOR GENERAL

(F. TORRANCE, B.A., D.V.S.)

FOR THE

YEAR ENDING MARCH 31, 1917

PRINTED BY ORDER OF PARLIAMENT.

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

[No. 15b—1918.]

REPORT

OF THE

VETERINARY DIRECTOR GENERAL.

OTTAWA, March 31, 1917.

SIR,—I have the honour to present my report for the year ending March 31, 1917.

The health of Canadian live stock has been fairly good, and the ravages of contagious diseases in general have been restrained within narrow limits, the statistics comparing favourably with those of previous years. The stamping out of foot-and-mouth disease in the United States has relieved us of much anxiety and enabled us to dispense with the extra precautions it had been necessary to take for the protection of Canada from this infection. Tuberculosis of hogs is shown by slaughter-house statistics to have again increased, and during the past five years has increased at the rate of 1 per cent per annum, and is now at the alarming figure of 19·37 per cent of hogs under federal inspection. The figures for cattle do not show any corresponding increase, the percentage for the same five years remaining practically stationary. Conservation of food demands that this great loss of food, lost through condemnation of tubercular meats, should be prevented by attacking the sources of infection and preventing the spread of the disease from cattle to hogs. This can be accomplished to a great extent by the sterilization of the by-products of cheese factories and creameries, and in my opinion this should be made compulsory. The cost of sterilization would be more than repaid by the protection of hogs and calves against tuberculosis.

In spite of the absence on military service of many members of our staff, the work of the branch has been carried on efficiently and economically, in both the Contagious Diseases and Meat Inspection Divisions. A detailed description of the work of the two divisions follows, beginning with our field work in control of contagious diseases.

GLANDERS.

A slight reduction in the number of horses destroyed is noted, as compared with last year, and, as before, the greater number of these were found in Saskatchewan. As previously indicated in former reports, the conditions in that province render the eradication more difficult than in other parts of Canada, and I am glad to note a reduction from 191 killed in 1916, to 164 killed in 1917.

Dominion.—Two were killed on inspection, 187 at first test, 31 at second test, 7 at third test, 1 at fourth test, total 228 (valued at $33,609, at a cost of $22,238.95).

Eighty-two showed clinical symptoms.

Eight thousand four hundred and eleven horses were tested with mallein, of which 233 reacted, 229 reactors being destroyed, the remaining 4 were returned to the United States. Of the 233 reactors, 82 showed clinical symptoms of glanders at or during the test.

Eighty-four horses are under control for retest.

Of the above 229 horses slaughtered, 2 were killed without compensation.

Nova Scotia.—Fifty-two horses were tested and proved to be healthy.

New Brunswick.—One hundred horses and one shetland pony tested and proved to be healthy.

Quebec.—Eight were killed at first test, 1 at second test, total 9 (valued at $1,494, at a cost of $995.99).

Six showed clinical symptoms.

Seven hundred and ninety-five horses were tested with mallein, of which 9 reacted and were destroyed. Of the 9 reactors, 6 showed clinical symptoms at or during the test.

No horses are under control for retest.

Of the nine slaughtered, 5 were in the electoral district of Nicolet, 2 in Terrebonne, 1 in Dorchester, and 1 in Pontiac.

Ontario.—One horse reacted to first test and was destroyed.

Two hundred and ninety-three horses, 5 mules, and one jack were tested with mallein; one horse reacted and was destroyed, having been imported at Cornwall, Ont.

Manitoba.—Six hundred and sixty-two horses and seven mules were submitted to the mallein test for the first time, and nine horses to the second test; all proved healthy.

Saskatchewan.—One hundred and twenty-four were killed at 1st test, 30 at 2nd test, 7 at 3rd test, 1 at 4th test, 2 on inspection; total, 164 (valued at $24,320, at a cost of $16,046.35).

Fifty-two showed clinical symptoms.

Four thousand seven hundred and twelve horses, 89 mules, 4 asses, were tested with mallein, of which 165 reacted; 164 were destroyed and one returned to the United States.

Of the 165 reactors, 52 showed clinical symptoms at or during the test.

Six horses are under control for retest.

Of the 164 horses slaughtered, 97 were in the electoral district of Regina, 46 in Moose Jaw, 13 in Assiniboia, 4 in Humboldt, 4 in Battleford.

Alberta.—Fifty-four were killed at 1st test, 1 at 2nd test; total, 55 (valued at $7,795, at a cost of $5,196.61).

Twenty-four showed clinical symptoms.

Some 1,167 horses and 20 mules were tested with mallein, of which 55 horses reacted and were destroyed. Of the 55 reactors, 24 showed clinical symptoms at or during the test.

Seventy-eight horses are under control for retest.

Of the 55 slaughtered, 39 were in the electoral district of Macleod, and 16 in Medicine Hat.

British Columbia.—A total of 496 horses and 6 mules were tested with mallein, of which 3 reacted and were returned to United States.

Yukon Territory.—One horse tested at White Horse, and proved healthy.

HOG CHOLERA.

Comparing this year with last, our losses show a reduction of 18·8 per cent. Again most of our outbreaks started from premises where raw garbage was fed to pigs. Our system of licensing garbage feeders appears to be working well, enabling us to maintain a close supervision over these places, and to get early information of the appearance of disease.

The use of serum for the protection of exposed hogs has been as extensive as circumstances would permit, and has resulted in a large saving to the country and to the hog raisers.

Serum Treatment of Hogs, 1916-17.

A total of 7,197 hogs were serum treated, 7 of which received second treatment; 289,794 cubic centimetres were used in above-mentioned treatment.

Serum cost, $4,350.

Amount saved by serum treatment—

Compensation saved to Department	$ 72,000
Value saved to owners (estimated)	144,000
	$216,000

In the Dominion, 4,623 hogs, valued at $49,607.50, were destroyed as diseased, at a cost of $30, 497·98 in compensation.

Nova Scotia.—$130 was paid for hogs slaughtered the previous fiscal year.

New Brunswick.—One owner's premises were quarantined on suspicion, involving the control of 1 hog.

Quebec.—Thirty-five outbreaks of hog cholera occurred, in which 1,570 hogs, valued at $21,160, were destroyed in the undermentioned districts, at a cost of $14,030.59 in compensation; 148 premises were also quarantined on suspicion, involving the control of 606 hogs; 4 hogs, valued at $54, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.	District.	No. outbreaks.	Hogs destroyed.
Jacques Cartier	2	84	Lévis	2	7
Laval	4	317	Champlain	1	57
Montmorency	3	50	Lotbinière	1	8
Quebec	4	764	Montcalm	1	5
Terrebonne	2	40	Portneuf	1	2
Bagot	2	32	Dorchester	1	6
Two Mountains	1	53	Beauce	1	2
Compton	1	4	Richelieu	1	42
Rouville	3	31	Three Rivers and St. Maurice	1	8
Argenteuil	1	10			
Nicolet	1	35		35	1,570
Bellechasse	1	13			

Ontario.—Forty-five outbreaks of hog cholera occurred in Ontario, in which 2,887 hogs, valued at $26,980.50, were destroyed in the undermentioned districts, at a cost of $15,489.40 in compensation; 439 premises were also quarantined on suspicion, involving the control of 6,603 hogs; 45 hogs, valued at $349.50, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. outbreaks.	Hogs destroyed.	District.	No. outbreaks.	Hogs destroyed.
Welland	3	148	Simcoe, S.R	2	105
Middlesex	1	59	Simcoe, N.R.	2	140
Essex, N.R.	1	46	Lincoln	2	215
Essex, S.R.	3	125	Nipissing	3	173
Kent, E.R.	1	183	Parry Sound	1	115
Kent, W.R.	1	203	Lambton, E.R.	2	44
Peel	1	149	Lambton, W.R.	2	42
York, N.R.	1	62	Norfolk	1	216
York, C.R.	1	63	Waterloo, S.R.	1	85
York, S.R.	1	158	Hastings, E.R.	1	42
Elgin, E.R.	1	4	Russell	3	307
Elgin, W.R.	1	41	Carleton	1	49
Algoma, E.R.	3	37	Huron, E.R.	1	19
Ontario, S.R.	1	4	Brockville	1	47
Glengarry	1	4			
Wentworth	1	2		45	2,887

Manitoba.—One outbreak of hog cholera occurred in Manitoba, in which 17 hogs, valued at $198, were destroyed without compensation.

Saskatchewan.—No outbreak of hog cholera occurred in Saskatchewan during the year 1916-17; 5 premises were quarantined on suspicion, involving the control of 218 hogs; 9 hogs, valued at $77, were destroyed for purposes of examination, but no evidence of hog cholera was found.

Alberta.—Eight outbreaks of hog cholera occurred in Alberta, in which 145 hogs, valued at $1,424, were slaughtered in the undermentioned districts at a cost of $949.33 in compensation; 8 premises were quarantined on suspicion, involving the control of 396 hogs; 11 hogs, valued at $127.50, were destroyed for purposes of examination, but no evidence of hog cholera was found.

District.	No. Outbreaks.	No. Hogs destroyed.
Edmonton	1	140
Macleod	1	5
	2	145

British Columbia.—One outbreak of hog cholera occurred in British Columbia, in which 5 hogs, valued at $43 were slaughtered at a cost of $28.66 in compensation. The above mentioned premises were in the electoral district of Nanaimo.

One owner's premises were also quarantined on suspicion, involving the control of 73 hogs. One of these hogs was destroyed for purposes of examination, at owner's request, but no evidence of hog cholera was found.

DOURINE.

A total of 48 animals, valued at $4,924, were slaughtered as being affected with this disease, at a cost of $3,222.63, distributed as follows:—

Province.	Electoral District.	Animals Quarantined.	Slaughtered.
Saskatchewan	Battleford	6	
	Moose Jaw	2	1
		8	1
Alberta	Medicine Hat	40	11
	Macleod	79	35
	Red Deer	15	1
	Calgary	4	
	Strathcona	1	
	Victoria	1	
		140	47
Manitoba	Dauphin	1	
		141	

In the electoral district of Medicine Hat there was one animal, valued at $30, taken over for experimental purposes at a cost of $20 in compensation.

HORSE MANGE.

Province.	Outbreaks.	Animals Affected.	Animals Quarantined.
Saskatchewan	6	62	376
Alberta	5	122	172

In the province of Quebec, electoral district of Beauce, one animal, valued at $200, was slaughtered, $133 being paid in compensation.

Some 16,194 horses and 95 mules were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan.

CATTLE MANGE.

This disease remains confined to certain portions of southern Alberta and south-western Saskatchewan, the infected district comprising what is known as the mange area. The movement of cattle from this area is under strict regulation, all cattle requiring veterinary inspection and dipping, unless destined to an abattoir for immediate slaughter. Within the area, continual efforts are being made to eradicate the disease by systematic dipping. Progress in this direction is fairly satisfactory, and, as a result, the number of infected herds is being reduced, and from time to time, as conditions warrant, the mange area is reduced in size.

Province.	Outbreaks.	Animals Affected.	Animals Quarantined.
Saskatchewan	12	892	10,799
Alberta	40	628	38,613
	52	1,520	49,412

Some 33,082 cattle were inspected on being presented for shipment from the quarantined area in Alberta and Saskatchewan, and 158,868 cattle were inspected in Winnipeg on arrival from points west thereof.

RABIES.

Alberta.—In Calgary, Alta., one owner's premises were quarantined.

Ontario.—In Ontario, 51 premises were quarantined distributed as follows:—

District.	Premises quarantined.
Dufferin	2
Durham	1
Elgin, W.R.	5
Halton	3
Middlesex, N.R.	1
" E.R.	1
Peel	3
Perth, S.R.	6
Oxford, S.R.	1
Toronto South	7
Toronto Centre	1
Welland	6
Waterloon, S.R.	1
Wellington, S.R.	1
York, C.R.	4
" N.R.	3
" S.R.	5
	51

SHEEP SCAB.

In Quebec, one sheep was quarantined in the electoral district of Montmorency, on suspicion of sheep scab.

In Manitoba, 54 animals on four premises were found to be affected with sheep scab, involving the control of 226 animals on 10 premises as follows:—

District.	Affected.	Quarantined.
Dauphin	54	214
Portage la Prairie	0	12
	54	226

In accordance with the quarantine regulations, 49,802 sheep, imported into Canada, were quarantined for the prescribed period of thirty days.

TUBERCULOSIS.

Our further experience in the operation of the new regulations shows that a step in the right direction has been taken. The absence of friction between our officers and the dairymen, whose herds have come under our regulations, is an indication that they are receiving fair treatment. It is also gratifying to note the comparatively small expense that has been incurred in removing tuberculous cows from the herds supplying milk to the two cities which have accepted federal aid. The experience of these cities will be likely to induce other municipalities to follow their example and thus protect their citizens from the danger of consuming raw milk from suspicious and perhaps diseased cows.

Some 444 cattle were tested on being imported into Canada, 13 of which reacted, 8 were classed as suspicious, and 423 proved healthy.

There were 1,802 cattle tested for export, 53 of which reacted, 6 were classed as suspicious, and 1,743 proved healthy.

A total of 2,991 cattle were tested, some being for shipment to different provinces of the Dominion, and others in herds under the supervision of the department, 207 reacted, 12 were classed as suspicious and 2,772 proved healthy.

There were 5,741 cattle tested by private practitioners, 481 of which reacted, 69 were classed as suspicious and 5,191 proved healthy.

All reactors were permanently earmarked by a veterinary inspector, in cases where the owner did not voluntarily destroy them.

MUNICIPAL TESTING.

Saskatoon Statistics.—Of 954 cattle submitted to first test, 13 were reactors, or 1·36 per cent; 1,058 submitted to second test, 16 were reactors, or 1·5 per cent; 435 submitted to third test, 5 were reactors, or 1·1 per cent; 129 submitted to fourth test, no reactors; 24 submitted to fifth test, no reactors; 14 submitted to sixth test, no reactors.

Seven reactors slaughtered; value, $1,605; compensation, $534.30. Four reactors, purchased subject to test, were returned to previous owners. Three reactors not yet slaughtered.

In addition to the above, 9 animals which reacted during 1915-16 were slaughtered this year; value, $960; compensation, $202.95.

Regina.—Testing commenced March, 1916, and was continued until September, 1916.

Of 2,253 cattle submitted to first test, 117 were reactors, or 5·19 per cent; 443 submitted to second test, 4 were reactors, or 0·9 per cent; 120 submitted to third test, no reactors.

Eighty-five reactors slaughtered, value, $5,140, compensation, $1,624.77.

ANTHRAX.

The following outbreaks were reported and dealt with during the year:—

Province.	Outbreaks.	Animals Quarantined.
Quebec	4	103
Ontario	6	246
Alberta	1	120
	11	469

SCABIES IN FOXES.

In Prince Edward Island, four foxes were quarantined on suspicion.

IMPORT INSPECTIONS.

Import inspections from United States and Newfoundland were: 63,624 horses, 10,694 mules, 6,146 cattle, 70,848 sheep, 223 swine, 147 goats, 19 asses, 3 foxes, 9 bears, 1 buffalo, 11 ponies, 2 deer, 2 donkeys, 9 camels, 2 wild horses, 2 burros, 72 elk.

Import inspections from Europe and elsewhere were: 80 horses, 299 cattle, 389 sheep, 10 swine, 1 jackass, 2 dogs.

A total of 3,673 horses were tested on arrival from the United States and allowed to proceed to their destination.

PURE BRED IMPORTS.

HORSES.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Belgian	....	13	....	13
Clydesdale	68	3	....	71
Hackney	1	3	....	4
Percheron	....	154	....	154
Shetland	....	7	....	7
Shire	1	....	....	1
Standardbred	....	84	....	84
Thoroughbred	9	12	....	21
Welsh Pony	....	3	....	3
Total	79	279	....	358

CATTLE.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Aberdeen Angus	....	37	....	37
Ayrshire	18	4	....	22
Brown Swiss	....	13	....	13
Dutch Belted	....	1	....	1
Guernsey	....	10	....	10
Hereford	....	25	....	25
Holstein	....	21	....	21
Jersey	....	60	25	85
Polled Angus	15	27	....	42
Polled Durham	....	3	....	3
Shorthorn	308	1	....	309
Total	341	202	25	568

SHEEP.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Cotswold	15	....	....	15
Dorset	....	7	....	7
Hampshire	....	59	....	59
Karakul	....	....	117	117
Lincoln	102	3	....	105
Leicester	2	....	....	2
Oxford	12	....	....	12
Shropshire	266	70	....	336
Southdown	6	44	....	50
Suffolk	4	....	....	4
Total	407	183	117	707

SWINE.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Berkshire	3	4	....	7
Chester White	....	8	....	8
Duroc Jersey	....	11	....	11
Large Black	5	....	....	5
Ohio Improved Chester	....	2	....	2
Poland China	....	1	....	1
Tamworth	....	2	....	2
Yorkshire	2	....	....	2
Total	10	28	....	38

GOATS.

Breed.	Great Britain.	United States.	Elsewhere.	Total.
Anglo Nubian	....	11	....	11
Toggenburg	....	1	....	1
Total	....	12	....	12

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DISEASED IMPORTS.

Port.	No. animals in infected shipments.	No. of shipments.	No. of animals infected.	Origin.	Action.
Cornwall, Ont.—Horses	2	1	1	United States	Reactor destroyed.
Big Muddy, Sask.—Horses..	2	1	1	" "	Both returned.
Kingsgate, B.C.—Horses ...	2	1	1	" "	Both returned.
Grand Forks, B.C.—Horses	4	1	1	" "	All returned.
Bridesville, B.C.—Goats ...	1	1	1	" "	Returned.
Huntingdon, B.C.—Cattle ..	7	1	1	" "	Returned.
Total	18	6	6		

ANIMALS INSPECTED FOR EXPORT.

Port.	Horses.	Cattle.	Sheep.	Swine.	Dogs.	Cats.
Charlottetown to Newfoundland.....	50	268	245	166	..	..
Summerside "	4	3	65	..	..	..
" " United States	..	..	11	..	..	..
Halifax to Newfoundland	6	1	..	1	..	..
" " Great Britain	2,796	..	..	..	..	..
" " St. Pierre and Miquelon.....	..	48	32	6	..	..
" " Bermuda	18	24	2	3	..	..
" " Jamaica	..	2	..	..	..	..
" " United States	..	..	..	..	2	1
" " * New Zealand.....						
Sydney to Newfoundland	200	1,205	223	80	..	..
St. John to destination unknown	2,053	..	..	..	..	..
" " United States	..	1	..	..	..	..
Toronto to "	..	10,095	2,091	..	..	..
" " Bermuda	..	42	..	..	..	..
Totals	5,127	11,689	2,669	256	2	1

* 1 monkey.

LABORATORIES.

The biological laboratory at Ottawa has continued to supply the mallein and tuberculin used by our officers in the diagnosis of glanders and tuberculosis, and has furnished an immense amount of black-leg vaccine, which is sold to farmers at a nominal price, and used for the protection of their herds against that disease. Other biological products, such as strangles and influenza bacterins have been produced in limited quantities, much of it supplied to the British Remount Commission for use in Canadian remount depots. Anti-abortion vaccine has also been prepared for use by our officers in experimental work in this disease. The staff of this laboratory has also done much useful work in examining morbid specimens sent in for diagnosis, in research work on diseases of poultry, and in the mounting and preparation of specimens for exhibition.

The branch laboratories at Lethbridge and Agassiz have done useful work in dealing with local problems affecting the live stock of southern Alberta and British Columbia, respectively. Dourine has chiefly occupied the attention of our acting pathologist at Lethbridge, his work in the serum diagnosis of that disease being of inestimable value in its eradication. At the Agassiz laboratory, the careful research work of Dr. Hadwen has already added much to our knowledge of the life-history of some important parasites of cattle and sheep. The value of such information is very great, as, without it, it would be difficult, if not impossible, to devise means for dealing with these parasites. A technical bulletin on the subject has been published.

MEAT INSPECTION DIVISION.

Owing to the heavy demand for meat foods, for the Allied armies as well as the peoples of Great Britain, France and Italy, the Meat Inspection Division has experienced its busiest year since the inception of its work and the beginning of the war.

This greatly increased amount of work has not only involved added responsibilities, but has been performed under what in ordinary times would have been considered hardship and a handicap, owing to a shortage of experienced help. Yet your responsible officers met and handled the unusual situation cheerfully and no less effectively, thanks largely to the capability of the inspectors in charge of the various plants.

The question of overtime work by our officers in establishments had been under consideration, and finally special reports were called for in connection with it. These contained conclusive evidence that, in many instances, overtime work had not been warranted. While, perhaps, it may be impracticable, if not impossible, to entirely eliminate the practice of overtime work in establishments generally, it has been reduced materially in some of them, while in others it has ceased altogether.

This change has been brought about through a plan adopted in October, and agreed to by the packers without demur, whereby the management of an inspected establishment shall pay for the services, after 6.30 p.m. o'clock, of an inspector; veterinarians at the rate of 75 cents, and lay inspectors at the rate of 50 cents per hour.

The department's annual qualifying examination for veterinarians was held at various points in Canada on April 22, 1916. Fifty candidates wrote on the papers of this examination, which was passed by thirty-three, ten of whom have been appointed to positions in the Meat Inspection service.

The regular increases in salary were given at the beginning of the year, and they were, I need hardly say, much appreciated.

During the year many improvements were made in establishments under inspection. Owing to the greatly increased amount of business in such establishments, some large additions were made to several of them. These additions being up to date in construction and equipment, a great and economic step forward has been made, as such additions are naturally much more readily maintained in a proper sanitary condition. This stands for the conservation of meat foods, and lessens materially the condemnation of foods because of contamination.

Legal action was taken by the department during the year in two cases of violation of the Meat and Canned Foods Act. One violation was an illegal shipment at Moose Creek, Ont. The other was by a railway in Quebec, which broke a seal on a car of meats. In each case a conviction was secured and a fine imposed.

The new Union abattoir in Winnipeg was completed in 1916, and began operations under inspection on December 14, 1916. It is officially known as Establishment No. 8.

The following statistics are respectfully submitted:—

A. Total slaughter:—

Cattle	648,859,	Increase over	1915–16,	106,705	head or	19·68 per cent.
Sheep	416,575,	"	1915–16,	13,428	"	3·33 "
Swine	2,245,511,	Decrease under	1915–16,	118,182	"	5·00 "

B. The provinces show increases or decreases as follows:—

Province.	Cattle.		Sheep.		Swine.	
	Head	Per cent	Head	Per cent	Head	Per cent
Ontario	+48·557	19·43	+1·291	0·77	−79·165	5·54
Quebec	+ 8·497	4·77	−2·448	1·90	−48·611	12·56
Manitoba	+26·300	58·58	+5·072	19·78	−13·868	6·76
Saskatchewan	+ 3·717	78·73	−2·661	34·93	−11·196	25·06
Alberta	+17·394	37·88	+4·970	14·18	+29·567	12·58
British Columbia	+ 2·461	15·59	+ 138	0·67	+10·879	27·01
New Brunswick	+ 380	100·00	+1·490	21·74	.....	.....
Nova Scotia	.....	.....	.....	.....	.....	.....
P.E.I	− 601	22·16	+3,576	44·15	− 5,788	24·90

C. The percentage of slaughter for each province for the total for all Canada:—

Province.	Cattle.	Sheep.	Swine.
	Per cent	Per cent	Per cent
Ontario	45·99	40·21	60·10
Quebec	28·79	30·32	15·07
Manitoba	10·97	7·37	8·50
Saskatchewan	1·30	1·18	1·49
Alberta	9·76	9·64	11·78
British Columbia	2·81	4·91	2·28
New Brunswick	0·06	2·00	.....
Nova Scotia	.....	.....	.....
Prince Edward Island	0·32	4·37	0·78

SLAUGHTERINGS.

Cattle.—With the exception of a decrease in Prince Edward Island, all the provinces showed an increase in cattle killed.

Sheep.—In sheep killings, we find Quebec and Saskatchewan behind last year, while other provinces are ahead.

Swine.—In swine, we find all provinces showing a decrease, with the exception of Alberta and British Columbia.

Provincial percentage to total kill (see table C).—Ontario still holds the highest percentage to total kill in the three species, although slightly lower than last year. Quebec shows a larger decrease than Ontario, while Manitoba, Saskatchewan, and Alberta show increases in cattle. Only Manitoba and Alberta improve their position in sheep, Saskatchewan being lower than last year, Alberta and British Columbia being the only western provinces to show an increase in percentage of hogs killed to total.

CARCASS CONDEMNATIONS.

Cattle.—The percentage of carcass condemnations this year is 1·68 per cent against 1·95 per cent last year. This of itself is very satisfactory, but the proportion condemned for tuberculosis is much higher than last year, namely, 39·90 per cent against 31·20 per cent previous year. This is probably due to the large number of canner stock killed.

Those condemned for bruises, cripples, and imperfect bleeding are slightly under last year, 3·41 per cent against 3·89 per cent.

Calves condemned for immaturity are considerably lower than previous year, 37·75 per cent against 48·03 per cent.

Emaciated cattle are a little lower than last year, 5·61 per cent against 6·58 per cent.

The porportion of calves killed to total kill is a little lower than last year, 14·83 per cent against 17·20 last year.

Sheep.—The slightly lower percentage of sheep carcasses condemned, 12 per cent against 14 per cent calls for little or no comment.

Swine.—Comparatively, there is no difference between the number of swine carcasses condemned this year and last, the percentages being 0·27 per cent and 0·28 per cent, respectively, while the total percentage is about the same. We find that those condemned for tuberculosis are a little higher than last year, 62·22 per cent against 61·76, while those condemned for *cyst. cellulosæ* are a little lower, 8·10 per cent against 8·28 per cent.

The condemnations for hog cholera amounted to only 72 carcasses, which is very satisfactory. Other condemnations run around the same per cent as in the previous year, and call for no comment.

In looking over our imports we find that Canada brought in from U.S.A. points over 153,000,000 pounds of pork. The greater proportion of this was in the shape of singed sides to make Wiltshire bacon to enable the packer to fill war orders.

These singed sides equalled 1,040,000 singed hogs, and weighed about 119,000,000 pounds, the balance, 34,000,000 pounds, being hams, backs, other cuts, and barrelled pork.

This 34,000,000 pounds is equal to about 260,000 hogs which, added to 1,040,000 singed, bring the American hog import to an equivalent of 1,300,000 hogs, or around 58 per cent of what was killed in Canadian houses under Government inspection.

It seems strange that with the unprecedented high prices of the past year that the Canadian farmers do not produce more hogs. Of course we are not alone in this respect, our neighbours have the same condition to report. It makes one ask the question: Is Canada, with all its possibilities, producing all the hogs she can?

In the face of the increasing population and the ever-increasing demands from England and her allies for hog meats and fats, the situation is looking very serious, for at present the United States and Canada are the only countries to whom England and her allies can look to for increased supplies of this kind.

In looking over our exports, it is satisfactory to note that we only exported 166,236 head of cattle (about 33 per cent of which were under one year), against 241,578 last year. There is also a reduction in sheep, 59,340 (73 per cent of which might be classed as lambs), against 94,588 the previous year.

Our bacon exports increased 64 million pounds over last year.

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Below you will find a comparison between hog killing of Canada, Denmark, and Ireland for calendar years:—

Year.	Canada.	Denmark.	Ireland.
1912	1,650,966	2,084,786	1,416,490
1913	1,564,246	2,215,850	1,181,285
1914	2,255,479	2,654,041	1,266,620
1915	2,616,461	1,960,965	1,376,063
1916	2,313,389	1,534,011	1,277,050
1917 (Jan. to Sept., inc.) 9 mos	1,358,646	950,000*	697,900

*Estimated.

Diseases.	Cattle.			Sheep			Swine.			Poultry.
	Carcasses.	Portions.	Lb.	Carcasses.	Portions.	Lb.	Carcasses.	Portions.	Lb.	Lb.
Abscess	23	29,834		15	301		34	4,713		
Actinomycosis	21	28,901			1			2,318		
Adhesions		12,749			533			13,541		
Arthritis				4			59	57		
Angiomatosis		1,575								
Bruises	115	63,791	7,866	20	1,955	45	29	19,691	66,698	
Cripples	13	163		2	43		6	7,555		
Cysts		144						3,658		
Cysticercus bovis	258	2,307								
" cellulosae							497	191		
" ovis				3	208					
" tenuicollis				1	313					
Congestion		30			48		2	2,908		
Cirrhosis		81						5,663		
Decomposed			190,259	6		8,224			81,670	
Dirty	2	218	356,318		49	2,150		761	168,134	
Emaciation	612			180			60			
Enteritis	14						57			
Emphysema	2	3		2			4	371		
Hernia				1	3		6	107		
Hydraemia	106	4		70						
Hog Cholera							72			
Immaturity	4,116									
Improper bleeding	244			58			165			
Inflammation	22			13			45	257		
Ieterus	9			19			28			
Induration							2			
Metritis	16			8			16			
Mucoid degeneration	290									
Melanosis	2	12								
Necrosis		35			3,388			11,325		
Nephritis	22						10			
Parasites		43,352			115,062			130,042		
Pericarditis	54			2			11			
Peritonitis	69			8			154			
Pleuritis	19			7			93			
Pneumonia	96			56			254			
Pyemia or septicaemia	221			30			556			
Sexual smell							57	904		
Skin disease								1,834		
Sarcoma	2			1			8			
Sour			147,453			4,819			174,759	

Septic infection	128	.....	.....	.....	.....	.....	2	.....	.....	.....
Tuberculosis	4,351	29,033	.....	2	.....	.....	3,818	825,389	.....	.....
Tumours	11	11	.....	.....	.....	.....	11	16	.....	.....
Uraemia	.....	.....	.....	2	.....	.....	14	.....	.....	.....
Various	65	2,829	10,487	8	314	28	66	641	6,875	.....
Total	10,903	215,072	712,383	518	122,218	15,266	6,136	1,031,942	498,136	1,517 and 302 carcasses.
Found dead	353	.....	.....	380	.....	.....	1,867	.....	.....	.....

The following summary shows the results of post-mortem inspections of cattle, sheep, and swine from April 1, 1916, to March 31, 1917:—

Cattle marked "Canada Approved"	637,956
Carcasses of cattle "Condemned"	10,903
Percentage of cattle "Condemned"	1·68
Portions of cattle "Condemned"	215,072
Sheep marked "Canada Approved"	416,057
Carcasses of sheep "Condemned"	518
Percentage of sheep "Condemned"	·12
Portions of sheep "Condemned"	122,218
Swine marked "Canada Approved"	2,239,375
Carcasses of swine "Condemned"	6,136
Percentage of swine "Condemned"	·27
Portions of swine "Condemned"	1,031,942
Total number of carcasses "Passed"	3,293,388
Total number of carcasses "Condemned"	17,557
Percentage of carcasses "Condemned"	·53
Total number of portions "Condemned"	1,369,232

In addition to the animals slaughtered at inspected establishments, the following amounts of dressed and cured meats and lard, etc., were received during the fiscal year from foreign countries:—

	Lb.
Beef	11,542,163
Mutton	762,164
Pork	140,966,449
Lard	1,424,712

During the course of reinspection the following meats were condemned:—

—	Cattle.	Sheep.	Swine.	Poultry.
	lb.	lb.	lb.	lb.
Bruised	7,866	45	66,698	.....
Decomposed	190,259	8,224	81,670	.....
Dirty	356,318	2,150	168,134	.....
Sour	147,453	4,819	174,759	.....
Various	10,487	28	6,875	1,517
Total	712,383	15,266	498,136	1,517

Total amount condemned on re-inspection, 1,225,785 pounds.

FRUIT AND VEGETABLES.

Owing to labour conditions, the plants engaged in canning fruits and vegetables have been under a severe handicap. A number of them did not operate at all. As a result, the total of the pack was much less, and the prices were much higher than would otherwise doubtless have been the case.

Sanitary conditions are well maintained. Their improvement during the past four years has been very marked.

Samples of all canned fruits and vegetables in Canada have been examined, and a record made. This record constitutes convincing evidence that, for the protection of the trade and the consumer, standards of quantity and quality should be established, promulgated, and enforced. The first steps are now being taken to that end.

The evaporators have been reported by our inspectors to be in good condition. Owing to the scarcity of apples, but about 40 per cent of the evaporators were operated during the year. However, the quality of the output was a decided improvement upon that of previous years. There has been quality if not quantity this year. Our supervision of the manufacture of evaporated apples, and our insistence upon the moisture-content being not more than 25 per cent, have been the primary causes of that improvement in quality shown in the high grade of evaporated apples now on sale.

EVAPORATED AND CONDENSED MILK.

The establishments manufacturing evaporated and condensed milk have had an exceptionally heavy year, but nevertheless the plants have been well maintained.

During the year, sediment tests were made of all milk supplied by the various patrons. The results of these tests were compared with those of tests made of milk supplied to the retail trade in cities and towns, to butter factories and to cheese factories. The comparison has shown that a capital quality of clean milk was being supplied to the manufacturers of evaporated and condensed milk. The favourable nature of this comparison reflects credit not only upon the patrons, but also upon the manufacturers of evaporated and condensed milk. It demonstrates that the manufacturers' campaign among their suppliers has been effective and therefore a success.

REPORT

ON THE

AGRICULTURAL INSTRUCTION ACT

1916-1917

PRINTED BY ORDER OF PARLIAMENT

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

[No. 15c—1918.]

Ottawa, December 15, 1917.

To the Hon. T. A. Crerar,
Minister of Agriculture,
Ottawa.

Sir,—I have the honour to present herewith my report for the fiscal year ending March 31, 1917, as Commissioner under the Agricultural Instruction Act.

I have the honour to be, sir,

Your obedient servant,

W. J. BLACK,
Commissioner.

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REPORT

ON THE

AGRICULTURAL INSTRUCTION ACT

FOR THE FISCAL YEAR 1916-17.

Tabled in pursuance of Section 8 of the above named Act.

Dominion Grant of 1916–17.

DATES OF PAYMENTS AND AMOUNTS PAID TO PROVINCES.

Province.	Date.	1st Half.	Date.	2nd Half.
		$ cts.		$ cts.
Nova Scotia	June 23, '16.	37,429 64	Sept. 8, '16.	37,429 64
Saskatchewan	Sept. 18, '16.	37,434 88	Aug. 28, '17.	37,434 88
New Brunswick	June 15, '16.	29,604 80	Oct. 23, '16.	29,604 80
British Columbia	July 20, '16.	31,866 25	Jan. 12, '17.	31,866 25
Manitoba	Aug. 17, '16.	29,383 60	Nov. 22, '16.	29,383 60
Alberta	June 24, '16.	30,873 61	Dec. 13, '16.	30,873 61
Prince Edward Island	June 17, '16.	15,221 87	Nov. 22, '16.	15,221 88
Quebec	June 29, '16.	121,606 12	Nov. 22, '16.	121,606 12
Ontario	June 8, '16.	125,579 22	Jan. 12, '17.	150,579 23
	Oct. 6, '16.	25,000 00		

VETERINARY COLLEGES.

Ecole de Médecin et de Science Vétérinaire de Montréal.....$ 5,714.28
(Paid on 4th January, 1917.)

ONTARIO.

AGREEMENT 1916-17.

1.	District Representative work including clerical or other assistance in connection with the administration		$120,000 00
2.	Agricultural College:—		
	(*a*) Capital expenditure	$55,000 00	
	(*b*) Salaries and expenses of additions to staff and maintenance	14,000 00	
			69,000 00
3.	O.A.C. Short Courses, travelling and living expenses of winners of Acre Profit and Live Stock competitions		1,800 00
4.	To encourage agriculture, manual training as applied to work on the farm and Domestic Science in High, Public, Separate and Continuation Schools, and in Universities, to be available for grants and for travelling and living expenses of teachers and others in attendance at Short Courses or other educational gatherings, in addition to services, expenses and equipment, and to be paid out on the recommendation of the Department of Education		26,000 00
5.	Educational work in connection with the marketing of farm products, including organization of co-operative societies, collection, printing and distribution of information on current prices and systems of marketing		5,000 00
6.	Stock and Seed judging Short Courses and Institute Lecture Work		2,000 00
7.	Drainage Work		10,000 00
8.	Demonstration and instruction in vegetable growing		4,000 00
9.	Demonstration work on soils		4,200 00
10.	Work in Beekeeping		1,500 00
11.	Dairy Demonstrations		1,658 45
12.	Fruit Work:—		
	(*a*) Experimental work at Vineland Horticultural Experimental Station	$2,500 00	
	(*b*) Demonstrations with vegetables and hardy fruits in New Ontario	3,500 00	
			6,000 00
13.	To provide for Agricultural School, including purchase of land, construction of buildings, purchase of equipment, and other services and expenses pertaining thereto, including operation and maintenance of the same		50,000 00
			$301,158 45

District Representative Work.

The work of the District Representatives has developed into the most important branch of the work of the Agricultural Department. During the past year there were 45 offices in as many different counties or districts. Formerly it was the policy of the Department to have the offices in charge of a graduate of the Ontario Agricultural College with either an undergraduate or graduate as Assistant. In view of the large number of enlistments, 25 of the men engaged in this work having responded to the call to the colours, it was decided that it would be impossible to attempt to continue Assistants in all of the offices. Hence it was decided that Assistants would be supplied only in the larger counties and that, in the other counties the work of the District Representatives might be supplemented by local help. In most cases some young farmers who have taken a Short Course at the College or at a District Representative Agricultural Class were utilized in plot inspection, helping at School Fairs or the other phases where extra help was needed for short periods. Necessarily a great deal of attention has been devoted to the campaign for increased production so necessary under war conditions. In addition to giving information on all kinds of subjects, they have rendered special assistance in the matter of distribution of seed and distribution of labour. The offices of the District Representatives have been designated as branches of the Labour Bureau so that farmers might apply locally, and if their requests could not be filled locally, they would be passed on to the central office. In addition to this special work, the regular work of the District Representatives has been well maintained. One of the important features of this work has been that devoted to interesting the boys and girls on the farm in

farm matters and imparting information as to better methods. One of the most effective means of accomplishing this has been the School Fair, and the following figures will show that the School Fair movement has developed in spite of the shortage of help and the difficulties incidental to war conditions:—

	1915	1916
Number of fairs held	234	275
Number of schools included	2,291	2,620
Number of children taking part	48,386	60,262
Attendance at fairs	157,266	178,246
Number of entries	116,236	113,263
Number of home plots	51,243	55,947

In the matter of Agricultural Classes the War has had a greater effect, as a considerable number of those who would otherwise attend have volunteered for active service or have been required to stay at home on account of the shortage of labour. The total attendance last winter at these Classes extending over four weeks was in the neighbourhood of 800. Out of these Classes have grown the Junior Farmers' Improvement Associations, an organization to maintain and carry on the interest developed in the Classes by a series of experiments and the Inter-County Live Stock Judging Competitions. In connection with the latter it may be explained that a Team comprising three chosen from the Classes represents the County at the Winter Fair at Guelph for Western Ontario to compete for a cup donated by the late Hon. J. S. Duff, and Teams similarly chosen from the Counties in Eastern Ontario meet at Ottawa to compete for a cup donated by Peter White, K.C. The winners, which last year were York and Dundas Counties respectively, met in Toronto early in February during the meeting of the Live Stock Associations and competed for a Provincial Championship Cup donated by the Union Stock Yards. This was won by Dundas County, which has the honour of holding the first Provincial Championship.

Other work carried on by District Representatives included Home Vegetable Garden Contests, Acre Profit and Live Stock Competitions, campaign against the smut menace, drainage surveys, demonstration orchards, alfalfa experiments, addressing educational and co-operative gatherings of various kinds, and a large variety of other very useful work.

Women's Institutes.

Although no appropriation was included in last year's Federal Grant for Women's Institutes, considerable work was done with the balance left from the previous agreement. This was very largely spent in providing speakers for Women's Institute meetings held throughout the Province. The special feature being developed in this connection is a two weeks' domestic science course for girls carried on much the same as the four weeks' courses in agriculture for boys. Very frequently, but not always, this is held at the same time and place as the boys' course, and the community of interest adds to the success of both courses. Last winter one of the girls' classes joined the boys' class in an excursion to Toronto where they visited the offices of the Department of Agriculture, after which the girls visited the Technical School and places for domestic science training, while the boys visited the Stock Yards and other similar points of agricultural interest. Last winter some 80 of these Classes were held throughout the Province with an attendance of over 2,500.

Drainage Work.

Two distinct lines of drainage work have been carried on. The availability of additional funds has greatly increased the usefulness of the work directed from the Ontario Agricultural College, which consists in making surveys,

supplying blue prints and holding demonstrations to give instruction as to the laying of tile. The demand for this class of work has shown a great increase, and the fact that over 150 ditching machines have been brought into the Province has made possible the laying of a great deal of tile in spite of the labour shortage, which would otherwise be a great handicap.

The other phase of the drainage work has been that carried on in the Algoma and Rainy River Districts. Labour for digging seemed to be one of the chief obstacles in the newer districts and the work did not appear to be sufficient to warrant the purchasing of a ditching machine or tile outfit on a commercial basis. In 1915, it was decided that practical assistance could be rendered by purchasing an outfit and demonstrating the possibilities of drainage in this way, doing the work on a basis of cost. This proved so successful that it was extended by the purchase of a machine for the Rainy River District in 1916, both machines being kept busy last season much to the advantage of the respective districts.

Dairy Demonstrations.

In view of the importance of improving the market quality of Ontario dairy products, it was decided that certain work should be undertaken in 1916 with a view to laying the foundation for a system of grading. A special man was employed and was engaged in making tests of samples of butter accessible in a number of the cold storages. The information he obtained in this way as to methods of marketing was utilized in giving instructions to the different creamerymen as to how improvements could be effected. It also placed the Department in possession of information as to the points of strength and weakness in the Ontario product, and as a consequence, it was decided to adopt a system of butter grading for the Province. This preliminary educational work having accomplished its purpose, the cost of butter grading will in future be carried under the regular appropriations of the Department.

Kemptville Agricultural School.

During the past year an announcement was made by the Minister of Agriculture for Ontario to the effect that the Department had decided to establish an Agricultural School in Eastern Ontario and that the village of Kemptville had been selected as the site. It is the intention that this School shall offer short courses and a two year course in Agriculture, and shall serve the eastern section of the Province, which is not now so served. The work of the Department in connection with School Fairs and Agricultural Classes has apparently created a demand for an institution of this character. Some 200 acres of land were purchased at Kemptville, a town well located on the railway and convenient to several Eastern Ontario Counties. This land will be operated as part of the School in order to give practical emphasis to the principles taught. Purchases of live stock and equipment have also been made, but the main building will not be constructed until the conclusion of the war.

Short Courses, Ontario Agricultural College.

In pursuance of the policy of former years, the District Representatives conducted Acre Profit Competitions and Live Stock Profit Competitions. The idea is to not only demonstrate the possibilities of an acre of land or a few head of stock, but also to interest the boys in this practical way. It has not been thought sufficient to award a prize merely for the largest yields unless the largest yields were accompanied by a careful accounting which meant also the largest

profits. The prize awarded to the winner in these competitions in the different counties is free travelling and living expenses to Guelph for the two weeks' Short Course in Live Stock and Seed Judging. The prize is, therefore, equally as educational as the competition.

Vegetable Work.

It is now recognized by those engaged in the vegetable growing industry that the appointment of a Vegetable Specialist under The Agricultural Instruction Act a few years ago has proven one of the best steps in the interests of the vegetable industry in the Province. During the past year the Vegetable Specialist carried on further work in connection with the control of celery and onion blight and the cabbage root maggot. This work consisted both of making practical experiments and conveying the information to the growers. During the winter months conferences were held in the different vegetable growing centres. These were made very practical and helpful and have been an important educational factor. During the past summer about 1,500 feet of film showing various phases of the work was prepared, and its display proved a most helpful feature of the conferences referred to.

Demonstration Work on Soils.

This work is carried on under the Professor of Chemistry at the Ontario Agricultural College who directs a field staff during the summer months, visiting various sections of the Province and charting the different soil formations. Analysis of a large number of samples is also made and practical growing tests are carried on. The work with reference to Western Ontario has been practically completed, and a publication is being issued giving this information to the public. The work will be continued in Eastern Ontario.

Fruit Demonstrations in Upper Ontario.

In 1915 it was decided that it would be good work to demonstrate the usefulness of certain varieties of tender or semi-tender fruits in Upper Ontario. In order to accomplish this with a minimum outlay, arrangements were made with the Provincial Secretary's Department of the Government by which a portion of the Farm owned by them and operated as a Prison Farm near Fort William should be at the disposal of the Department. The Department appointed a competent man to take charge of the work, and preliminary efforts have laid the foundation for most useful work in the newer sections.

Co-operation and Marketing.

The work of the Branch devoted to co-operation and marketing has been entirely of an educational nature. The efforts of the Director and his assistants, who so far are only temporarily employed, have been confined very largely to giving instruction on the marketing of different products. A number of new associations have been organized, but considerable time has been spent in placing organizations already in existence on a proper footing.

Agricultural Education.

The Inspector of Elementary Agricultural Classes, Dr. J. B. Dandeno, reports that in 1916, 752 Public and Separate Schools qualified for grants for the teaching of Agriculture. The requirements are, teaching in class for at

least one hour a week throughout the school year and home or school gardens. The equipment needed is paid for in the form of grants to the Boards.

The teaching of Agriculture is recognized only in Forms III, IV, and V, and in these classes there were, in 1916, over 13,000 pupils. The cost is about 75 cents a pupil per year. The Inspectors are required to pay special attention to the teaching of Agriculture, and an allowance is made them for the work. Though much of the teaching is as yet by no means what might be desired, yet most of the work is very creditable and some exceedingly good.

Twenty-one Secondary Schools conducted classes in Agriculture in 1916 with about 600 pupils. Allowances are made to Boards for equipment and to teachers for conducting the work.

The cost of instruction in Agriculture in the Normal Schools is met mainly from Provincial funds, but the Federal grant is drawn upon to provide special equipment. In 1916, 196 teachers attended the Summer School courses at the Ontario Agricultural College. Of these 153 attended the course leading to an Elementary certificate, and 43 attended the Intermediate certificate course. Students are allowed $25 for maintenance and travelling expenses, conditional on their teaching Agriculture throughout the year following the course. In 1917 and thereafter, a short course in Farm Mechanics, of at least four weeks, will be given to teachers who are qualifying to teach Agriculture in the High Schools.

Officers Provided by the Dominion Grant.

(a) Officers, regularly employed, whose salaries are paid wholly from the Agricultural Instruction Grant:—

Ontario Agricultural College, Guelph—
- Lecturer in Poultry, F. N. Marcellus, B.S.A.
- Lecturer in Farm Management, A. Leitch, B.S.A.
- Lecturer in Rural Sociology, A. Maclaren, B.S.A.
- Lecturer in Geology and Soils, John Woodward.
- Lecturer in Physics, J. R. Spry, B.S.A.
- Soil Analyst, S. R. Curzon, B.S.A.
- Demonstrator in Horticulture, H. S. Fry, B.S.A.
- Lecturer in Chemistry, C. W. Stanley.
- Lecturer in Animal Husbandry, J. P. Sackville, B.S.A.
- Poultry Specialist, G. R. Wilson.
- *Horticulturist, G. J. Culham, B.S.A.
- *Assistant in Soil Work, F. Bryant.
- Assistant in Soil Work, D. Johns.

Department of Agriculture, Toronto—
- Stenographers, four.
- Director, Co-operation and Markets Branch, F. C. Hart, B.S.A.
- Assistant, Co-operation and Markets Branch, J. B. Fairbairn, B.S.A.
- District Representative Supervisor, R. S. Duncan, B.S.A.
- Assistants in Vegetable Work, Frank F. Reeves, Geo. Madden, Richard Aymer.

Department of Agriculture, Outside Service—
- Corn Specialist, P. L. Fancher, B.S.A., Chatham.
- Plant Breeding Specialist, W. R. Leslie, Fort William.

Horticultural Experiment Station, Vineland, Ont.—
- Assistant Experimentalist, P. E. Culverhouse, B.S.A.
- In charge of Fruit Extension Work, O. J. Robb.

*On Active Service.

SESSIONAL PAPER No. 15c

Department of Education, Toronto—
Director of Elementary Agricultural Education, Dr. J. B. Dandeno.
Teacher of Domestic Art, Miss A. E. Robertson.

(*b*). *Officers regularly employed, whose salaries are paid in part from the Grant.*
Department of Agriculture, Outside Service—
Forty-five District Representatives.

ONTARIO.

Summary Statement, April 1, 1916, to March 31, 1917.

Classification.	Balance, April 1, 1916.	Grant.	Refunds.	Total Credits.	Expenditure.	Cr. Balance.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1 District Representatives	3,847 10	120,000 00	101 50	123,948 60	123,101 53	847 07
2. Ontario Agricultural College—						
(*a*) Capital expenditure	27,677 73	55,000 00	1,000 00	83,677 73	28,338 01	55,339 72
(*b*) Salaries and expenses of additions to staff and maintenance	2,378 68	14,000 00	.....	16,378 68	13,022 82	3,355 86
3. O.A.C. Short Courses for winners of Acre Profit and Live Stock Competitions	115 23	1,800 00	.....	1,915 23	1,890 75	24 48
4. To encourage Agriculture, Manual Training and Domestic Science in Schools	11,608 01	26,000 00	.....	37,608 01	14,844 67	22,763 34
5. Marketing of Farm Products	2,233 67	5,000 00	.....	7,233 67	4,615 12	2,618 55
6. Stock and Seed Judging, Short Courses, etc	4,530 59	2,000 00	411 05	6,941 64	3,800 85	3,140 79
7. Drainage Work	10 34	10,000 00	2,085 00	12,095 34	10,439 73	1,655 61
8. Demonstrations in vegetable growing	38 37	4,000 00	.....	4,038 37	3,943 76	94 61
9. Demonstration work on soils	.....	4,200 00	.....	4,200 00	3,685 60	514 40
10. Bee-keeping	52 31	1,500 00	.....	1,552 31	878 24	674 07
11. Dairy Demonstrations	.....	1,658 45	.....	1,658 45	1,519 87	138 58
12. Fruit Work—						
(*a*) Experimental Work, Vineland Station	868 23	2,500 00	.....	3,368 23	2,107 00	1,261 23
(*b*) Demonstrations with vegetables and fruits in New Ontario	.....	3,500 00	.....	3,500 00	1,138 25	2,361 75
13. To provide for Agricultural school	.....	50,000 00	185 00	50,185 00	21,603 66	28,581 34
	53,360 26	301,158 45	3,782 55	358,301 26	234,929 86	123,371 40
Additional from 1915-16.						
Women's Institutes	5,045 27	.....	132 81	5,178 08	5,007 32	170 76
Short Courses, Fall Fair Judges	427 59	.....	.....	427 59	59 85	367 74
Demonstrations in Live Stock and Poultry	2,070 60	.....	368 50	2,443 49	1,541 60	901 89
Transferred from Agric'l Aid account			4 39			
Demonstrations in Fruit Growing	4,297 42	.....	.....	4,297 42	1,100 00	3,197 42
Lectures on Horticulture	224 20	.....	.....	224 20	213 18	11 02
Miscellaneous	3,663 00	.....	.....	3,663 00	2,401 77	1,261 23
	69,088 34	301,158 45	4,288 25	374,535 04	245,253 58	129,281 46

1.—DISTRICT REPRESENTATIVES.

Balance April 1, 1916	$ 3,847 10
Grant 1916-17, $100,000.00, by transfer, $20,000.00	120,000 00
Refunds credited to appropriation	101 50
	123,948 60
Expenditure to March 31, 1917	123,101 53
Balance March 31, 1917	847 07

Brant	$ 2,717 19	Lennox	$ 2,498 82
Bruce	2,444 03	Muskoka	2,057 28
Carleton	2,358 60	Miscellaneous	17,553 70
Dufferin	4,366 36	New Liskeard	2,045 34
Dundas	2,432 57	Northumberland	1,986 14
Durham	2,975 50	Norfolk	2,168 72
Elgin	2,761 05	Ontario	3,042 43
Essex	2,162 60	Oxford	2,523 36
Frontenac	2,309 71	Prince Edward	2,744 39
Fort William	1,270 83	Port Arthur	1,261 71
Grenville	3,502 62	Peterboro	2,127 07
Glengarry	3,181 32	Peel	3,868 12
Gore Bay	2,158 53	Rainy River	2,153 66
Grey	2,729 26	Renfrew	2,044 75
Halton	1,666 71	Sault Ste. Marie	1,826 58
Hastings	1,739 77	Simcoe	2,781 08
Haldimand	1,785 59	Sudbury	1,910 89
Kenora	1,661 21	Victoria	2,232 24
Kent	2,806 07	Waterloo	2,123 01
Lambton	2,339 66	Welland	2,408 27
Lanark	2,180 38	Wentworth	2,026 51
Leeds	2,638 56	York	2,494 14
Middlesex	2,733 53	Cochrane	301 67
	$56,921 65		$ 66,179 88
			56,921 65
			$ 123,101 53

2.—ONTARIO AGRICULTURAL COLLEGE.

(a) Capital Expenditure.

Balance April 1, 1916		$ 27,677 73
Grant, 1916-17		75,000 00
Refund credited to appropriation		1,000 00
		$ 103,677 73
By transfer to District Representatives		20,000 00
		$ 83,677 73
Expenditure to March 31, 1917		28,338 01
Balance, March 31, 1917		$ 55,339 72
Poultry Building,—		
Labour	$ 599 60	
Material	299 42	$ 899 02
Physics Buildings,—		
Labour	673 48	
Material	1,123 91	
Furnishings	1,498 93	
Incidentals	37 59	3,333 91
Chemistry Building,—		
Labour	899 30	
Materials	2,497 33	
Contracts	20,485 01	
Incidentals	233 44	24,105 08
		$ 28,338 01

In addition to finishing up work in connection with the Poultry Building and Physics Building, the main work carried on was the addition of a new wing to the Chemistry Building.

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(*b*) Salaries and expenses of Additions to Staff.

Balance, April 1, 1916	$ 2,378 68
Grant, 1916-17	14,000 00
	$ 16,378 68
Expenditure to March 31, 1917	13,022 82
Balance, March 31, 1917	$ 3,355 86
R. Bryant, Assist. in Drainage Work, services	$ 720 00
G. J. Culham, Lecturer in Horticulture, services and expenses	835 00
S. R. Curzon, services	166 00
H. S. Fry, Lecturer in Horticulture, services and expenses	1,548 05
A. Leitch, Lecturer in Farm Management, services	1,841 00
J. P. Hales, Lecturer in Poultry, services	1,200 00
C. M. Laidlaw, Assist. in Drainage Work, services	93 95
F. N. Marcellus, Lecturer in Poultry, services	1,641 00
J. R. Spry, Lecturer, services and expenses	1,601 40
C. W. Stanley, services	200 00
J. P. Sackville, Lecturer in Animal Husbandry, services	1,241 00
J. Woodward, Lecturer in Chemistry, services and expenses	1,935 42
	$ 13,022 82

3.—SHORT COURSES, O.A.C.

Balance, April 1, 1916	$ 115 23
Grant, 1916-17	1,800 00
	$ 1,915 23
Expenditure to March 31, 1917	1,890 75
Balance, March 31, 1917	$ 24 48
Travelling and living expenses of winners of competitions	$ 1,835 75
Printing and Stationery	55 00
	$ 1,890 75

4.—TO ENCOURAGE AGRICULTURE IN PUBLIC SCHOOLS.

Balance April 1, 1916	$ 11,608 01
Grant, 1916-17	26,000 00
	$ 37,608 01
Expenditure to March 31, 1917	14,844 67
Balance March 31, 1917	$ 22,763 34
J. B. Dandeno, services as inspector	$ 2,499 96
A. F. Robertson, services as Instructor in Domestic Art	1,500 00
Instructors and students, services and expenses	4,601 03
Grants	5,405 50
Printing, advertising, contingencies	378 18
	$ 14,844 67

5.—EDUCATIONAL WORK *RE* MARKETING.

Balance, April 1, 1916	$ 2,233 67
Grant, 1916-17	5,000 00
	$ 7,233 67
Expenditure to March 31, 1917	4,615 12
Balance, March 31, 1917	$ 2,618 55
F. C. Hart, Director, services and expenses	$ 2,614 04
J. B. Fairbairn, Assistant, services and expenses	$ 1,040 90
Stenographer	618 75
Printing, stationery, contingencies	341 43
	$ 4,615 12

6.—STOCK AND SEED JUDGING.

Balance, April 1, 1916	$ 4,530 59
Grant, 1916-17	2,000 00
Refunds credited to appropriation	411 05
	$ 6,941 64
Expenditure to March 31, 1917	3,800 85
Balance, March 31, 1917	$ 3,140 79

Services and expenses of Instructors,—

G. Browne	$119 10	G. R. Green	$ 50 00
C. E. Bain	19 10	H. G. Reed	267 90
G. A. Brethen	4 20	F. H. Silcox	15 90
W. J. Bell	150 00	R. S. Stevenson	315 15
W. E. Baker	361 50	D. M. Winter	50 00
R. H. Harding	238 25	F. R. Mallory	96 12
J. Gardhouse	14 30	J. P. Sackville	37 20
W. J. Gardhouse	25 25	D. MacVannel	6 25
H. M. King	24 30	C. Schuyler	77 25
W. Leitch	93 55	R. M. Tipper	21 24
J. M. McCallum	115 15	A. W. Sirett	50 00
G. E. Day	33 55	Forward	1,564 81
A. R. Ness	98 61		$ 2,561 82
E. P. Bradt	99 80	Labour, cartage, etc	359 31
G. A. Putnam	100 00	Rent of stock	395 91
W. G. Orvis	17 25	Print. and Advertising	372 31
E. Gordon	50 90	Rent of halls, etc	102 50
	$ 1,564 81	Livery hire	19 00
			$ 3,800 85

This expenditure was largely for lecturers who did Educational work throughout the country in short courses in Stock and Seed Judging, carried on under the Institutes Branch of the Department.

7.—DRAINAGE WORK.

Balance, April 1, 1916	$ 10 34
Grant, 1916-17	10,000 00
Refunds credited to appropriation	2,085 00
	$ 12,095 34
Expenditure to March 31, 1917	10,439 73
Balance, March 31, 1917	$ 1,655 61
W. Dunn, Demonstrator, services and expenses	$ 557 49
E. Murdock, Demonstrator, services and expenses	291 00
I. B. Martin, Demonstrator, services and expenses	411 10
J. W. Wadsworth, Demonstrator, services and expenses	335 43
W. H. Scott, Soil Analyst, services and expenses	709 88
A. M. Morton, Laboratory Assistant, services	360 00
C. M. Laidlaw, expenses	79 35
Stenographer	129 50
Fieldmen, services and expenses	685 88
Draftsmen, services and expenses	126 34
Tile layers	250 71
Machine operators	321 13
Surveyors	136 54
Concrete mixer	870 54
Ditching machine	2,390 41
Tile, supplies, repairs, etc	2,008 06
Printing, postage, stationery, cartage	776 36
	$ 10,439 73

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8.—DEMONSTRATION IN VEGETABLE GROWING.

	$ cts.
Balance, April 1, 1916	38 37
Grant 1916-17	4,000 00
	4,038 37
Expenditure to March 31, 1917	3,943 76
Balance, March 31, 1917	94 61
S. C. Johnston, Vegetable Specialist, services and expenses	2,196 69
Sundry persons lecturing, services and expenses	510 35
Livery and incidentals	479 80
Furnishings and equipment	700 39
Printing, stationery, etc	56 53
	3,943 76

9.—DEMONSTRATION WORK ON SOILS.

	$ cts.
Grant, 1916-17	4,200 00
Expenditure to March 31, 1917	3,685 60
Balance, March 31, 1917	514 40
R. A. Brink, services and expenses	315 70
S. R. Curzon, services and expenses	700 00
H. L. Fulmer, services and expenses	26 80
A. L. Gibson, services and expenses	177 46
R. Harcourt, services and expenses	177 55
W. L. Iveson, services and expenses	282 99
D. Johns, services and expenses	540 00
C. Stanley, services and expenses	824 58
J. Woodward, services and expenses	170 40
Supplies, equipment, repairs	357 75
Sundry persons, services and expenses	96 50
Freight and cartage	13 07
Incidentals	2 80
	3,685 06

10.—DEMONSTRATIONS IN BEE-KEEPING.

	$ cts.	$ cts.
Balance, April 1, 1916		52 31
Grant, 1916-17		1,500 00
		1,552 31
Expenditure to March 31, 1917		878 24
Balance, March 31, 1917		674 07
Students and Instructors, services and expenses—		
C. E. Arnold	61 85	
J. Armstrong	50 25	
A. Denison	102 26	
A. E. Hutchison	34 00	
G. F. Kingsmill	137 12	
M. Pettit	205 84	
S. A. Stewart	64 00	655 32
Stenographer		150 00
Supplies, etc		72 92
		878 24

A number of short courses and demonstrations were given at fall fairs and other centres.

11.—DAIRY DEMONSTRATIONS.

	$ cts.
Grant, 1916-17	1,658 45
Expenditure to March 31, 1917	1,519 87
Balance, March 31, 1917	138 58
J. H. Scott, services and expenses as official grader of butter	1,504 42
Contingencies	15 45
	1,519 87

12 (*a*).—HORTICULTURAL EXPERIMENT STATION.

	$ cts.
Balance, April 1, 1916	868 23
Grant, 1916	2,500 00
	3,368 23
Expenditure to March 31, 1917	2,107 00
Balance, March 31, 1917	1,261 23

	$ cts.
P. E. Culverhouse, Special Hypatics, services and expenses	1,256 06
E. Culp, assistant, services and expenses	161 15
Supplies, equipment, incidentals	689 79
	2,107 00

12 (*b*).—FRUIT DEMONSTRATIONS IN NEW ONTARIO.

	$ cts.
Grant, 1916-17	3,500 00
Expenditure to March 31, 1917	1,138 25
Balance, March 31, 1917	2,361 75

E. M. Ricker, services and expenses	125 51
W. R. Leslie, services and expenses	100 00
Trees and equipment	79 72
Contingencies	186 39
Fuel	647 13
	1,138 75

13.—AGRICULTURAL SCHOOL.

	$ cts.
Grant, 1916-17	50,000 00
Refunds credited to appropriation	185 00
	50,185 00
Expenditure to March 31, 1917	21,603 66
Balance, March 31, 1917	28,581 34

	$ cts.
Purchase of land	14,500 00
Purchase of live stock and implements	5,337 77
Equipment	263 55
Labour	792 18
Seed grain	624 88
Sundries	85 28
	21,603 66

WOMEN'S INSTITUTES.

	$ cts.
Balance, April 1, 1916	5,045 27
Refunds credited to appropriation	132 81
	5,178 08
Expenditure to March 31, 1917	5,007 32
Balance, March 31, 1917	170 76

Lectures—Services and Expenses—	$ cts.
E. Broughton	34 90
R. M. Black	120 35
C. Brown	108 30
E. G. Conover	11 40
E. B. Chapman	80 50
E. D. Campbell	20 48
E. Collins	609 80
B. A. Duncan	178 97
M. I. M. Foote	281 04
G. Gray	680 45
H. E. Graydon	78 60
O. E. Hayes	255 13
I. Hobbs	124 90
E. McKay	187 90
B. McDermand	75 00
A. McEwen	218 65
D. Pirie	66 20

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WOMEN'S INSTITUTES—*Concluded.*

Lectures—Services and Expenses—Concluded.	$ cts.	$ cts.
J. D. Ross	375 21	
A. P. Scott	75 00	
L. K. Sirrs	139 65	
M. L. Woclard	250 02	
A. H. Willett	71 40	
M. H. Williams	75 00	
M. M. Steele	116 85	
M. M. Smith	66 60	
M. Yates	182 85	
		4,485 15
Printing, advertising, contingencies		522 17
		5,007 32

SHORT COURSES FOR FALL FAIR JUDGES.

	$ cts.
Balance April 1, 1916	427 59
Expenditure to March 31, 1917	59 85
Balance March 31st, 1917	367 74

	$ cts.
Sundry persons, services and expenses	59 85

DEMONSTRATIONS IN LIVE STOCK AND POULTRY..

	$ cts.
Balance, April 1, 1916	2,070 60
By transfer from Poultry Work, Agricultural Aid	4 39
Revenue credited to appropriation	368 50
	2,443 49
Expenditure to March 31, 1917	1,541 60
Balance, March 31, 1917	901 89

Lectures Services and Expenses—	$ cts.	$ cts.
H. Barton	50 00	
S. K. Burden	15 00	
E. S. Bates	25 00	
W. Barrie	15 00	
L. N. Clark	25 00	
G. E. Day	35 00	
W. F. Elliott	15 00	
J. M. Gardhouse	30 00	
J. Gardhouse	60 00	
L. R. Guilds	30 00	
E. A. Hales	49 50	
W. A. Leitch	35 00	
R. Miller	55 00	
R. McEwen	40 00	
E. L. Richardson	30 00	
		509 50
Reporting conventions		230 00
Printing		165 51
Purchase of animals for demonstrations		592 34
Sundries		44 25
		1,541 60

This expenditure was mainly for educational work, carried on in connection with the winter fairs at Ottawa and Guelph.

DEMONSTRATION IN FRUIT GROWING.

	$ cts.
Balance, April 1, 1917	4,297 42
Expenditure to March 31, 1917	1,100 00
Balance, March 31, 1917	3,197 42

	$ cts.
O. J. Robb, services as fruit specialist	1,100 00

The expenditure under this head consisted in maintaining a fruit specialist in the field, working with Vineland as his headquarters.

LECTURES IN HORTICULTURE.

	$ cts.
Balance, April 1, 1916	224 20
Expenditure to March 31, 1917	213 18
Balance, March 31, 1917	11 02
Instructors, services and expenses	213 18

This covers the services and expenses of a few lecturers who were sent out to give information on horticultural work in towns and cities.

MISCELLANEOUS.

	$ cts.
Balance, April 1, 1916	3,663 00
Expenditure to March 31, 1917	2,401 77
Balance, March 31, 1917	1,261 23
	$ cts.
R. A. Moore, services lecturing	80 00
A. Maclaren as lecturer on rural sociology	1,590 81
Seed	730 96
	2,401 77

AGRICULTURAL AID GRANT, 1912.

STATEMENT, April 1, 1916, to March 31, 1917.

	Balance, April 1, 1916.	Balance on hand March 31, 1917.
	$ cts.	$ cts.
Milking Shorthorns	1,856 11	1,856 11
Dairy Survey	215 51	215 51
Ontario Veterinary College Additional land	13,494 93	13,494 93
Western Ontario Creamery work	1,131 90	1,131 90
Total	16,698 45	16,698 45
Live stock, Northern Ontario—Refund	3,427 84	3,427 84
Total	20,126 29	20,126 29

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COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural purposes for the years 1913, 1914, 1915, and 1916, and estimated Expenditure for 1917.

Service.	1913 To Oct. 31.	1914 To Oct. 31.	1915 To Oct. 31.	1916 To Oct. 31.	1917 To Oct. 31. Appropriations.
Department of Agriculture—	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Salaries, contingencies, incidentals and miscellaneous	98,306 79	109,973 95	98,021 72	87,137 90	119,031 00
County representatives	40,596 68	39,668 93	35,917 01	82,299 36	80,600 00
Live Stock Interests—					
Grants and Winter Fairs, Grants to Poultry Association and Horse Shows, Stallion Registration, Sheep Experiments, etc., Spring Shows	38,793 66	38,563 78	43,079 35	37,314 11	46,450 00
Dairy Interests—					
Grants: Instruction and Inspection, Dairy School, Miscellaneous	58,574 35	58,701 09	54,601 40	56,698 72	142,297 00
Agricultural and Horticultural Societies—					
Insurance, Field Crop Competitions and Judges, Exhibitions Special Grants	129,473 98	125,548 19	123,867 11	158,216 36	154,750 00
Institute—Farmers' and Women's	32,932 25	27,323 52	23,187 08	27,305 31	30,800 00
Fruit Interests—					
Grants, Spraying Assistance, Special Crop Experiments, Cold Storage experiments, San Jose Scale, Horticultural Experiment station, Apiary Inspection Demonstration Work	45,454 87	54,934 72	49,515 68	46,949 41	55,100 00
Ontario Veterinary College—					
Salaries and Expenses	32,929 74	33,589 22	28,989 05	23,231 08	31,229 00
Ontario Agricultural College, Macdonald Institute and Ontario Experimental Farm.....					
Salaries and Expenses	264,458 55	284,507 65	289,315 94	290,405 04	322,092 00
Demonstration Farm, Northern Ontario	.....	.....	.....	15,500 41	8,000 00
Total	741,520 87	771,811 05	755,494 34	825,057 70	990,449 00
Revenue	177,131 50	157,141 80	138,906 62	130,577 30	.....
Net Total	564,389 37	614,669 25	616,587 72	694,480 40	.....

NOTE.—The above statement does not include expenditure under colonization, factory inspection and stationary engineers' branches.

QUEBEC.

AGREEMENT, 1916-17.

	$ cts.
1. Poultry	15,000 00
2. Horticulture—Fruit growing	33,000 00
3. Bacon	8,000 00
4. Schools of Agriculture	60,000 00
5. Agricultural teaching in Academies, Rural Schools and Normal Schools	14,000 00
6. District Representatives, Agricultural Teachers—Agronomies	25,000 00
7. Experimental Union	2,000 00
8. Alfalfa and clover	5,000 00
9. Seed selection	4,500 00
10. Bee-keeping	9,000 00
11. School of Veterinary Science	5,000 00
12. Dairying	29,000 00
13. Drainage	8,000 00
14. Domestic Science	10,000 00
15. Maple sugar	4,000 00
16. Conferences, Publications, etc	11,712 23
Total	243,212 23

The report of Dr. J. C. Chapais, Assistant Commissioner for Quebec, contains the following particulars as to the work performed during the year:—

Poultry Rearing.

Twenty-five poultry rearing, breeding or feeding stations were in operation. These stations are operated by their owners and leased to the Department for ten dollars per month. Five stations conducted customs incubators. Twenty-thousand eggs were distributed to school children.

Horticulture.

The staff of the Horticultural Division of the Quebec Department of Agriculture comprises twenty-eight officers, of whom two are permanent, ten are instructors employed during the whole year, and sixteen are instructors employed for eight months. The work of the service is spread over twenty-one demonstration fields, twenty-nine fruit growing stations and six demonstration orchards. During the winter of 1916-17, lectures and demonstrations were delivered in twenty-two counties. Assistance was also given at short courses and in connection with school exhibits.

Bacon Industry.

In 1916 the direction of the St. Valier abattoir, built and equipped to demonstrate bacon curing and general abattoir work, was placed in the hands of the Quebec Cheesemakers' Co-operative Association, which will continue to operate it for instruction purposes under the management of Mr. A. Hansen, a Danish expert brought to this country in 1912.

Schools of Agriculture.

Two visits were paid to the Schools of Agriculture at Oka and Ste. Anne de la Pocatière. It was feared that the disastrous fire which destroyed the Trappist Monastery at Oka would interfere with the running of the Institute, but such proved not to be the case.

Following are statements of expenditure of these institutions to March 31, 1917.

OKA AGRICULTURAL INSTITUTE.

Expenditure of Federal Grant, July, 1916 to March 31, 1917.	$ cts.
Enlargement of College Building, annual payment	5,000 00
Teaching Staff, salaries and allowances	5,098 47
Expenses of various branches	375 00
Administration, salaries and wages	2,775 00
Insurance, heating and lighting	1,763 42
Allowance for maintenance of students at $9 per month	1,200 00
Demonstration plots, maintenance during recess	202 00
	16,413 89

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÉRE.

Expenditure of Federal Grant, July 1916 to March 31, 1917.	$ cts.
Building Extension, annual payment	6,000 00
Salaries and allowances, Teaching Staff	5,330 00
Administration, wages	1,563 00
Insurance, heating and lighting	2,112 96
Allowance for maintenance of students	1,486 58
Demonstration plots	500 00
Library	256 19
Milk investigation work	225 00
Poultry-keeping	100 00
Incidentals	57 00
	17,630 73

Agricultural Teaching in Academies and Schools.

Short courses for School Inspectors were provided both at Oka and at Ste. Anne de la Pocatière. The subjects dealt with included horticulture, poultry and bee-keeping as well as general agriculture. The lecture staff of the Quebec Department of Agriculture delivered lectures on agricultural topics in the various classical colleges and in some of the primary schools and institutions. Lectures in domestic science, agricultural economics, co-operation, etc., were prominent in the programme.

School gardens to the number of 759 were carried on in 59 counties during 1916, and 37 school fairs were held in the French counties, to which 5,749 children contributed 10,900 exhibits. In addition, there were thirteen school fairs held in the English counties with 2,493 children contributing.

District Representatives.

The following representatives and assistant representatives carried on work in the districts named:—

Representative.	District.
Albert, J. N.	Bonaventure and Gaspe.
Belanger, M. A. J.	Chicoutimi and Lake St. John.
Cloutier, Henri	Iberville and Rouville.
Desilets, Alphonse	Quebec and Montmorency.
Fortin, J. A.	Champlain.
Husk, R. E.	Beauharnois and Huntingdon.
Leclerc, J. M.	Abitibi.
MacDougall, W. G.	Compton and Sherbrooke.
Magnan, Jean-Chs.	Portneuf.
Parent, L. V.	Richmond.
Raymond, Abel	Bellechasse et Dorchester.
Rousseau, R. A.	Bagot and Drummond.
Roy, Alphonse	Arthabaska and Megantic.

Assistant representatives.	District.
Belanger, M. J. A.	Beauharnois and Chateauguay.
Delancy, Wilfrid	Quebec and Montmorency.
Gagnon, Roger	Kamouraska and L'Islet.
Gosselin, L. A.	Bellechasse and Dorchester.
Landry, Arthur	Bagot, Drummond and Bellechasse.
Paquet, J. A.	Quebec and Montmorency.
Saint-Armand R.	Portneuf.

The work embraced the following subjects, viz.:—Dairy husbandry, bee-keeping, poultry husbandry, horticulture, general agriculture and school gardens.

Experimental Union.

This institution has its headquarters at Belvidere Villa, Ste.-Foye Road, Quebec, where lectures and demonstrations are given to farmers, normal school students and boys from the city who intend to make farming their vocation. In the programme of work for the season, emphasis was placed on greater production.

To promote poultry husbandry, a co-operative incubator is operated, while some twenty poultry houses have been erected in the newer parts of the province and small flocks of birds distributed. Experiments in alfalfa growing are conducted with the assistance of the district representatives.

Clover Demonstrations.

Thirty-four clover demonstration fields were operated with the object of promoting the growing of clover for seed. The two clover hullers owned by the Department were demonstrated in localities where a beginning was being made. The production of seed clover continues to make rapid expansion, and the demonstrations carried on have been very successful in stimulating production. One hundred and twenty-five hullers are now owned in the province, principally by clubs.

Underdrainage.

The policy of encouragement to underdrainage was continued. Nine instructors, French and English, were kept at the disposal of farmers who wished to underdrain their land, and plans were prepared free of charge. During the season, 84,430 feet of trench was dug on nine farms by the two ditching machines operated by the Department.

Short Courses.

Short courses for farmers (Semaines agricoles) were held in two divisions, the work of the eastern section from Quebec to Gaspe being performed by the professors of the two schools of agriculture, while in the western section the department's staff of lecturers took charge. In the East courses were held at eight points in five counties. Number of lectures, 245; number of demonstrations, 23; total attendance, 19,204. In the West, one course was held in each of sixteen counties. Number of lectures, 558; number of demonstrations, 46; total number in attendance, 33,670.

Macdonald College.

Animal Husbandry.—The attention of this department during the year was again devoted to sheep husbandry. The demonstration flocks of pure-bred sheep were increased from eight to thirteen. The example of these flocks and the distribution of the pure-bred rams resulting from them is having a marked influence. Co-operative wool grading and marketing was continued through the associations of sheep breeders, and two sales of pure-bred sheep were conducted.

Poultry Husbandry.—This line of extension work included (1) exhibits at Fairs and demonstration and lectures at various centres; (2) demonstration with different types of poultry houses at six points; (3) the maintenance of pure-bred flocks in connection with housing demonstrations, and the distribution of suitable breeding stock to the farmers of the community; (4) the distribution of eggs to rural schools for hatching purposes.

Rural School Department.—Most of the work carried on during the year was in connection with school fairs. The number of schools taking part in

1916 was 191, and the number of exhibitors 2,493. Seed and eggs were supplied for distribution by the poultry, cereal, and horticultural departments. Some 4,893 samples of seed and settings of eggs were distributed in 325 schools, both French and English. The department has 900 plots to be visited and reported upon. In addition to school fair work, a course of lectures is given to the Macdonald Summer School Students and also at the Summer School for teachers at Lachute. Rural schools are visited, school boards interviewed, school grounds improved, and lectures in agriculture given in the superior schools.

Household Science.—Five Homemakers' Clubs were organized during the year, and much patriotic and food and nutrition work accomplished.

Fifty-seven demonstrations were given to school children on canning and bread-making. Emphasis was laid on canning as a means of preventing waste in war time, and the formation of canning and marketing clubs was assisted. A bulletin on canning was issued.

Short Courses.—The following winter short courses were held:

(1) At Montreal, surburban gardening; four evenings; attendance 367.

(2) At Macdonald College; four days; Animal Husbandry; Cereal Husbandry; attendance 56.

(3) At Macdonald College; two weeks; Poultry Husbandry; attendance 10.

Classes in Veterinary work were given at the College and also at points throughout the Province.

Investigation and Research.—In the department of Biology, the study of the Bud Moth, an important apple insect in Quebec, was completed. In the Horticultural department work in apple pollination was continued, and a test and study of onion and cabbage seed undertaken. Three demonstration orchards are conducted by this department; also experiments in vegetable irrigation. The work of the Cereal Husbandry department consisted mainly in the continued investigation of root crops, experiments with alfalfa and corn at country points and in rendering assistance to school fairs. In the Chemistry department the investigation of maple sap products was continued; while in the Physics department, the investigation of certain aspects of soil fertilization was carried on.

Statement of Receipts and Disbursements for year ended March 31, 1917.

Receipts—	$ cts.
Credit, balance April 1, 1916	279 29
Grant, 1916-17	20,500 00
Dr. balance, March 31, 1917	2,947 62
	23,726 91

Disbursements—	
(Including salaries of members of Staff paid wholly or partly from grant).—	$ cts.
Animal Husbandry	4,852 73
Biology	1,006 54
Cereal Husbandry	2,226 57
Chemistry	1,051 90
Demonstration	3,111 48
Horticulture	398 14
Household Science	2,205 11
Physics	700 00
Poultry	2,239 41
Veterinary Science	1,653 40
Rural Schools	3,251 47
General	733 10
Short Courses	297 06
	$23,726 91

OFFICERS RECEIVING REMUNERATION FROM THE FEDERAL GRANT.

(A) Persons, regularly employed, whose salaries are paid wholly from the Agricultural Grant.

Instructor L. P. Belzile, Department of Agriculture, Quebec.
" Raoul Dumaine, St-Guillaume d'Upton, Quebec.
" J. G. Morgan, Department of Agriculture, Quebec.
" J. M. Talbot, Department of Agricultre, Quebec.
" Antonio Mathieu, Department of Agriculture, Quebec.
" Lucien Dupuis, Department of Agriculture, Quebec.
" J. E. Grisé, Department of Agriculture, Quebec.
" Cyrille Vaillancourt, Department of Agriculture, Quebec.
" J. T. Hamel, Department of Agriculture, Quebec.
" Wilfrid Delaney, Department of Agriculture, Quebec.
" Francisque Petraz, 1366 Maple Ave., Montreal.
" G. Reynaud, Berthierville,
" Jos. Reddy, Department of Agriculture, Quebec.
" J. J. Gautreau, Department of Agriculture, Quebec.

Bacon Industry, A. Hansen, St. Valier, Bellechasse county.
Seed Expert, Ls. Lavellée, St. Guillaume d'Upton, Quebec.
Lecturer, Miss Eveline LcBlanc, Bonaventure, Quebec.
" Miss Eva Paré, Causapscal, Quebec.
Entomologist, Georges Maheux, Department of Agriculture, Quebec.
Clerk, J. D. Barbeau, 142 Sauvageau St., Quebec, " Poultry Branch."
" O. Roberge, Ste-Rosalie, Quebec.
" Ros. Carbonneau, Department of Agriculture, " "

District Representatives—
J. N Albert, Bonaventure, Quebec.
Michel Belanger, Roberval, Quebec.
E. N. Blondin, Huntingdon, Quebec.
Henri Cloutier, Rougement, Quebec.
Alp. Desilets, Quebec, Que.
J. A. Fortin, St. Stanislas, Quebec.
Arthur Landry, St. Charles, Bellechasse Co., Quebec.
J. M. Leclair, Makamik, Abitibi, Quebec.
J. C. Magnan, St. Casimir, Portneuf, Co. Quebec.
W. G. MacDougall, Lennoxville, Quebec.
L. V. Parent, Richmond, Quebec.
Abel Raymond, Plessisville, Quebec.
R. A. Rousseau, Acton Vale, Quebec.

Assistant District Representatives—
Paul Brunelle, Department of Agriculture, Quebec.
Wilfrid Chamberland, Acton Vale, Quebec.
Roger Gagnon, Ste-Anne de la Pocatière, Quebec.
Sauveur Gosselin, Rougemont, Quebec.
Gustave Mongeau, Roberval, Quebec.
Denis Ouellet, St-Stanislas, Champlain, Quebec.
J. A. Plante, St. Casimir, Portneuf, Quebec.
Evangeliste Poulin, Richmond, Quebec.
Alex. Rioux, Makimik, Quebec.
X. N. Rodrigue, Bonaventure, Quebec.
L. C. Roy, Plessisville, Quebec.
J. R. St. Arnaud, Lennoxville, Quebec.
St. Hilaire, Pierre, St. Charles, Bellechasse Co., Quebec.
Therrien Lucien, Huntingdon, Quebec.

(B) Persons, regularly employed, whose salaries are paid in part from the Agricultural Instruction Grant.

J. Arthur Paquet, Accountant, Department of Agriculture.

School of Agriculture, Sainte-Anne-de-la-Pocatière.

Professor of Chemistry, L'Abbè Geo. Cote;
" of Horticulture, L'Abbè P. Levasseur;
" " L'Abbè A. Letourneau;
" of English, L'Abbè T. Ennis;
" of French, L'Abbè Ed. Beaudoin;
" of Mathematics, L'Abbè S. Lord;
" de Droit Rural, Notaire Dupuis;
" of Botany and Entomology, Geo. Bouchard;
" de Genie Rural, Albert Sirois;
Instructor Bacon Curing, Frs. Dionne, B.S.A.;
Professor of Horticulture, Albert Jalbert;
Demonstration in Dairying, P. Boulet;
Assistant farm foreman, N. Jourdain;
" " N. Sènèchal;
Assistant Professor and Superintendent of Demonstration Plots, L.-d-G. Fortin, B.S.A.;
Demonstrator in Dairying, Joseph Verret;
" Horticulture, Mederic Chalifour;
Domestics (4 persons).

The Oka Agricultural Institute, La Trappe, Que.

The salaries of the following are paid wholly from the Federal Subsidy:—

Director: Rev. Father Jean de la Croix;
Chiefs of general practice, Brothers Gerard and Celestin, and other heads of Departments.
Chaplains: RR. FF. Humbert and Alfred.
Chief Master: Father Yves.
Institute Secretary, Donat Fortin and assistant;
Professor of Chemistry and instructor agricultural engineering: H. Nagant;
" of Physics, J. N. Ponton;
" of Agricultural and experimental field, Ph. Roy;
" of Entomology, Firmin Letourneau;
" of Veterinary Medicine, Dr. A. Dauth and Brother Isidore;
" of Apiculture: Father Maur;
" of Horticulture: Father Athanase;
" of Poultry Husbandry: Brother Wilfrid;
Instructor in horticulture: L. Arscott;
" arboriculture: Father Honorè;

The salaries of the following are paid partly from the Federal Subsidy:—

Professor of English: Rev. Brother Benjamin;
" of Arboriculture, Rev. Father Leopold;
" of Biology, zoology and zootechny, Rev. Brother Isidore;

Macdonald College.

Officers regularly employed, whose salaries are paid wholly from the Agricultural Instruction grant.

Veterinarian, N. E. McEwan, B.V.S.C., V.S.;
Sheep Husbandry, A. A. McMillan, B.S.A.;
Assistant in Biology, E. M. Duporte, B.S.A.;
" Physics, R. Dougall, B.S.A.;
" Animal Husbandry, A. E. McLaurin, B.S.A.;
" Chemistry, J. G. Van Zoeren;
Crop Investigator, E. A. Lods, B.S.A.;
Demonstrator Homemakers' Clubs, Mrs. N. C. MacFarlane;
Assistant Demonstrator Homemakers' Clubs, Miss J. Babb;
Rural School Demonstrator, J. E. McOuat, B.S.A.;
Assistant Rural School Demonstrator, J. Harold McOuat, B.S.A.;
District Demonstrator, C. H. Hodge, B.S.A., Shawville, Quebec.

QUEBEC,

Balance of Grant of 1915–16.

Statement from March 31, 1916, to September 26, 1916.

No.	Classification.	Balance, April 1, 1916	Expended to Sept. 26, 1916
		$ cts.	$ cts.
1	Poultry	5,456 02	5,456 02
2	Fruit	5,759 40	5,759 40
3	Bacon	575 92	575 92
4	Schools of Agriculture	18,594 94	18,594 94
5	Instruction in Academies and schools	383 00	383 00
6	District representatives	1,319 30	1,319 30
7	Experimental Union	1,000 00	1,000 00
8	Clover and Alfalfa	4 96	4 96
9	Seed	542 99	542 99
10	Bee-keeping	3 45	3 45
11	Tobacco		
12	Dairying		
13	Drainage	281 80	281 80
14	Domestic Science	459 59	459 59
15	Maple Sugar	1,924 29	1,924 29
16	Lectures and Publications	0 60	0 60
		$ 36,306 26	$ 36,306 26

1.—POULTRY.

	$ cts.
Salary and Expenses, Instructors—	
R. Dumaine	317 98
Rev. J. B. A. Allaire	153 76
A. A. Lapointe	33 50
J. G. Morgan	289 79
Leon Picard	248 11
Rev. Fr. Liguori	389 10
J. D. Barbeau	102 50
Art. Mathieu	215 40
Art. Heroux	50 00
Art. Chabot	31 45
Pascal Fortier, allowance organizing station	60 00
	1,891 59
Superintendents, Poultry Plants allowance, rental	1,287 60
Printing	1,691 04
Eggs for distribution	98 30
Eggs for Incubation	289 95
Equipment—	
Incubators	81 00
Beauceville Poultry Station, allowance for construction of " eleveuse "	116 54
	5,456 02

2.—HORTICULTURE.

Fruit Division; salary and expenses—		
Solyme Roy, Chief Horticulturist	$ 423 84	
J. H. Lavoie, Assist. Horticulturist	527 42	
Rev. V. A. Huard, Provincial Entomologist	225 00	
P. Reid, Superintendent, Demonstration orchards, expense	34 95	
		$ 1,211 21
Instructors, Lecturers, Salary and expenses—		
J. T. Hamel	$ 433 35	
Phil. Hamel	145 90	
J. M. Talbot	360 29	
Alf. LeBel	368 00	
Tel. Roy	55 61	
Jas. Cloutier	210 83	
F. X. Gossilin	205 22	
L. Dupuis	122 50	
G. Renaud	87 50	
Sundry persons, expenses	46 70	
		$ 2,035 90
Berthierville Nursery		712 12
Printing—		
J. H. Lavoie, 20,000 copies " Guide to Horticulture "	$ 1,100 00	
5,000 copies Bulletin No. 21	288 00	
Miscellaneous	88 03	$ 1,476 03
Equipment, supplies, incidentals		324 14
		$ 5,759 40

3.—BACON.

A. Hansen, Bacon expert, salary and expenses	$ 272 96	
A. C. St. Pierre, Manager, St. Valier, salary and expenses	148 35	
		$ 421 31
Insurance, abattoir		83 50
Printing and incidentals		71 11
		$ 575 92

4.—SCHOOLS OF AGRICULTURE.

School of Agriculture, Ste. Anne de la Pocatière, balance of grant and board of students	$ 7,384 94
Oka Institute of Agriculture, balance of grant	5,910 00
Macdonald College, balance of grant	5,00 000
Orphelinat Agricole a Vauvert	300 00
	$ 18,594 94

5.—AGRICULTURAL TEACHING IN ACADEMIES, RURAL AND NORMAL SCHOOLS.

Seeds for distribution to school children	$ 292 30
Lecturers, services	90 00
Incidentals	0 70
	$ 383 00

6.—DISTRICT REPRESENTATIVES.

General Expenses—	$ cts.
J. W. Leclair	188 47
A. Raymond	105 95
H. Cloutier	73 69
J. A. Fortin	110 63
J. N. Albert	29 65
A. Paquet	49 70
R. A. Rosseau	106 50
J. C. Magnan	111 25
A. Desilets	218 35
A. Landry	14 50
	1,008 69
Typewriter	158 10
Printing	80 38
Miscellaneous	72 13
	1,319 30

7.—EXPERIMENTAL UNION.

	$ cts.
Balance of grant to Quebec Experimental Union	1,000 00

8.—CLOVER AND ALFALFA.

Postage	4 96

9.—SEED SELECTION.

Salaries and Expenses—

	$ cts.
J. E. Kronstrom	50 00
Les Brown	116 70
A. Pare	50 00
Ls. Lavellee	62 50
L. Francoeur	119 80
L. P. Belzile	77 70
A. Desmarais	65 75
Incidentals	0 54
	542 99

10.—BEE-KEEPING.

Incidentals	$3 45

13.—DRAINAGE.

Drainage Specialists, Services and Expenses—

	$ cts.
R. Barbin	50 00
L. P. Gauvin	62 25
N. April	64 35
O. Garneau	50 00
W. Giroux	50 00
	276 60
Incidentals	5 20
	281 80

14.—DOMESTIC SCIENCE.

	$ cts.
Rev. O. L. Martin, Provincial Inspector, salary and expenses	343 08
Allowance to Domestic Science School, Roberval, for equipment	48 00
Incidentals	68 51
	459 59

15.—MAPLE SUGAR.

	$ cts
Beauceville School—Alex. Boulduc, Supt., Allowance and expenses	100 00
Labelle School, J. H. Lefebvre, Supt., rental	350 00
Ste. Louise School, J. L. A. Dupuis, Supt., allowance, expense, rental	331 30
St. Casimir School, A. Tessier, Supt., rental, 1916	400 00
M. Belanger, Instructor, services and expenses	203 60
Alfred Lebrun, services and expenses	96 05
A. Francoeur, services and expenses	127 55
Sundry persons, expenses, sugar-making demonstrations	224 30
Supplies and incidentals	91 49
	1,924 29

16.—LECTURES, PUBLICATIONS.

Incidentals	$0 60

QUEBEC.

Grant of 1916–1917.

Summary Statement, April 1, 1916, to March 31, 1917.

No.	Classification.	Grant.	Expenditure.	Dr. Balance.	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.
1	Poultry	15,000 00	15,000 00		
2	Horticulture	33,000 00	26,022 64		6,977 36
3	Bacon	8,000 00	6,025 41		1,974 59
4	Schools of Agriculture	60,000 00	51,556 58		8,443 42
5	Agricultural teaching in academies, rural and normal schools	14,000 00	10,176 42		3,823 58
6	District representatives	25,000 00	27,964 43	2,964 43	
7	Experimental Union	2,000 00	2,000 00		
8	Clover and alfalfa	5,000 00	5,000 00		
9	Seed selection	4,500 00	4,500 00		
10	Bee-keeping	9,000 00	9,000 00		
11	School of Veterinary Science	5,000 00			5,000 00
12	Dairying	29,000 00	25,000 00		4,000 00
13	Drainage	8,000 00	7,850 15		149 85
14	Domestic Science	10,000 00	8,481 50		1,518 50
15	Maple Sugar	4,000 00	2,343 51		1,656 49
16	Conferences, publications, etc	11,712 23	10,645 60		1,066 63
					34,610 42
					2,964 43
	Total	243,212 23	211,566 24	2,964 43	31,645 99

1.—POULTRY.

	$ cts.	$ cts.
Grant, 1916–17	15,000 00	
Expended, March 31, 1917		15,000 00
	15,000 00	15,000 00

Salaries and expenses—

	$ cts.
Rev. Fr. Liguori	1,250 63
Rev. J. B. A. Allaire	909 05
J. D. Barbeau	437 66
J. G. Morgan	953 57
Leon Picard	775 75
R. Dumaine	992 13
Ant. Mathieu	855 54
Tel. Roy	128 30
Sundry persons	81 57
Superintendents poultry plants	2,549 00
Supplies poultry plants	923 44
Equipment poultry plants	217 98
Special Course, Ste. Anne de la Pocatière	214 00
Expenses *re* Poultry Improvement Oka Institute	101 35
Preparing and printing 20,000 copies Poultry Bulletin	4,610 03
	15,000 00

2.—HORTICULTURE.

	$ cts.	$ cts.
Grant, 1916-17	33,000 00	
Expended, March 31, 1917		26,022 64
Balance forward		6,977 36
	33,000 00	33,000 00

Fruit Division—

	$ cts.
Solyme Roy, salary and expenses	368 45
J. H. Lavoie	1,022 24
Rev. V. A. Huard	97 75
Geo. Maheux	1,092 61
Books, periodicals, office supplies	597 45
Furniture	389 75
Bulletins and printing	1,637 56
Supplies and incidentals	1,157 31

Fruit Stations—

Superintendents, allowances	2,169 33
Supplies and incidentals	1,196 22
Fruit trees and implements	474 52
Nursery Berthierville	1,140 97

Instructors, lecturers, etc., salaries and expenses—

Peter Reid	1,369 09
A. Label	1,130 05
L. Dupuis	1,987 65
Phil. Hamel	957 12
G. Raynaud	1,389 80
J. M. Talbot	1,346 94
J. T. Hamel	1,055 80
J. H. Grise	991 04
Jos. Cloutier	726 70
Et. Paradis	242 67
A. Pearson	370 60
O. Gauvin	157 78
T. E. Tremblay	164 95
Arm. St. Pierre	164 98
Sundry persons	1,401 31
Equipment—	
Stereopticon	80 90
Canning machinery, Oka Institute	1,141 10
	26,022 64

3.—BACON.

	$ cts.	$ cts.
Grant, 1916-17	12,000 00	
Expended, March 31, 1917		6,025 41
Balance forward		5,974 59
	12,000 00	12,000 00

	$ cts.
A. Hansen, salary and expenses	2,238 99
Sundry persons, salary and expenses	86 67
Insurance, abattoir	289 88
St. Valier abattoir, repairs	99 22
Bulletins and printing	1,683 20
Pork and bacon meetings, services and expenses, sundry persons	1,427 45
Incidentals	200 00
	6,025 41

SESSIONAL PAPER No. 15c

4.—SCHOOLS OF AGRICULTURE.

Grant, 1916-17	$ 60,000 00	
Expended, March 31, 1917		$ 51,556 58
Balance forward		8,443 42
	$ 60,000 00	$ 60,000 00
Ste. Anne de la Pocatière	$ 16,000 00	
Allowance for students' board	1,256 58	
		$ 17,256 58
Oka Agricultural Institute		17,000 00
Macdonald Agricultural College		17,000 00
Orphelinat Agricole à Vauvert		300 00
		$ 51,556 58

5.—AGRICULTURAL TEACHING IN ACADEMIES, RURAL AND NORMAL SCHOOLS.

Grant, 1916-17	$ 14,000 00	
Expended, March 31, 1917		$ 10,176 42
Balance forward		3,823 58
	$ 14,000 00	$ 14,000 00

Services and Expenses—		
J. G. Magnan	$ 753 35	
Lecturers, sundry persons	3,816 95	
		$ 4,570 30
Printing		280 89
Incidentals		413 00
School fairs expenses		484 28
Ste. Anne de la Pocatière, allowances to Short Course students		1,459 85
Oka Institute, allowances to Short Course students		1,854 37
Macdonald College, Special Course allowance		1,113 73
		$ 10,176 42

6.—DISTRICT REPRESENTATIVES.

Grant, 1916-17	$ 25,000 00	
Expended, March 31, 1917		$ 27,964 43
Balance forward	2,964 43	
	$ 27,964 43	$ 27,964 43

Salaries and Expenses—	
J. M. Leclair	$ 1,962 54
R. A. Rosseau	2,069 18
A. Raymond	1,237 68
J. C. Magnan	1,963 39
J. B. & H. Cloutier	1,978 78
J. A. Fortin	1,757 59
W. Delaney	849 88
J. A. Desilets	856 54
Ray Husk	1,666 54
J. R. St. Arnaud	745 50
Art. Landry	1,076 30
Alp. Roy	1,120 57
W. G. Macdougall	1,252 96
L. V. Parent	1,144 26
M. Belanger	766 02
J. N. Albert	1,877 42
L. A. Gosselin	1,486 00
Alp. Paquet	681 25
Alp. Desilets	841 22
Stationery and Incidentals	1,165 81
Macdonald College, supplies and furnishings for seven representatives	1,505 00
	$ 27,964 43

7.—EXPERIMENTAL UNION.

Grant to Experimental Union of the Province of Quebec	$ 2,000 00

8.—CLOVER AND ALFALFA.

Salaries and Expenses—

L. P. Belzile	$ 913 20
L. Francoeur	588 16
L. Brown	100 00
O. Garneau	135 30
E. Francoeur	101 95
Sundry persons	524 94
Demonstration plots, rental and expenses	1,126 38
Allowances rental, etc., of plots	723 12
Supplies and seed	224 92
Gas engine	500 00
Incidentals	62 03
	$ 5,000 00

9.—SEED SELECTION.

Salaries and Expenses—

Ls. Lavallee	$ 1,207 01
O. Roberge	486 45
L. E. Kronstrom	482 81
J. A. Paquet	450 00
L. P. Belzile	691 09
A. Raymond	447 77
O. Garneau	163 20
M. Francoeur	241 55
Sundry persons	30 62
Supplies and seed	255 82
Incidentals	43 68
	$ 4,500 00

10.—APICULTURE.

Salaries and Expenses—

C. Vaillancourt	$ 1,234 02
Hector Beland	874 40
A. A. Comire	736 28
H. Comire	784 00
L. J. A. Dupuis	757 25
Luc Dupuis	774 00
Elz. Girard	751 60
D. Rochefort	390 65
Henri Beland	331 30
W. J. Comire	414 50
O. Comire	589 65
P. A. Dupuis	461 50
B. Brissette	500 00
E. Brissette	227 25
	$ 8,826 40
Young Women's Club supplies	60 00
Supplies and Incidentals	63 15
Orphelinat Agricole St. Damien, honey extractor	25 00
Beauceville College, hives	25 45
	$ 9,000 00

12.—DAIRYING.

To September 30, 1916	$ 25,000 00
Towards salaries and expenses of inspectors of cheese and butter factories	$ 25,000 00

13.—DRAINAGE.

Grant, 1916-17		$ 8,000 00	
Expended, March 31, 1917			$7,850 15
Balance forward			149 85
		$ 8,000 00	$8,000 00
Ste. Anne de la Pocatière, salaries and expenses—			
Ulric Jean	$ 622 10		
R. Barbin	835 85		
O. Garneau	659 69		
F. N. Savoie	171 50		
N. April	482 73		
L. P. Garvin	442 97		
		$3,214 84	
Macdonald College, salaries and expenses—			
G. E. Emberley	$ 437 02		
L. C. Hawke	332 95		
F. G. Hetherington	323 36		
J. W. Sutherland	153 49		
C. M. Ewart	279 00		
		$ 1,525 82	
John Drolet, services and expenses		848 24	
W. Giroux, " "		1,140 83	
J. Delaney, " "		50 00	
Renewals, repairs, supplies		679 65	
Incidentals and postage		390 77	
		$7,850 15	

14.—DOMESTIC SCIENCE.

Grant, 1916-17		$10,000 00	
Expended, March 31, 1917			$8,481 50
Balance forward			1,518 50
		$10,000 00	$10,000 00
Salaries and Expenses—			
Rev. O. L. Martin	$ 751 90		
Miss E. Leblanc	458 62		
Miss Eva Paré	461 58		
Miss J. Anctil	121 20		
Grants to Domestic Science Schools	5,529 42		
Macdonald College, grant special course	500 00		
Domestic Science Schools' Exhibit, Quebec	342 85		
Printing and stationery	315 93		
	$ 8,481 50		

15.—MAPLE SUGAR.

Grant, 1916-17		$4,000 00	
Expended, March 31, 1917			$2,343 51
Balance forward			1,656 49
		$4,000 00	$4,000 00
Allowances, Sugar Schools—			
St. Louise	$ 992 54		
St. Casimir	330 00		
Beauceville	500 00		
A. Francoeur, travelling expenses	50 00		
Printing	304 37		
Supplies	166 60		
	$ 2,343 51		

16.—SHORT COURSES AND LECTURES.

Grant 1916-17		$11,712 23	
Expended, March 31, 1917			$10,645 60
Balance forward			1,066 63
		$11,712 23	$11,712 23

16.—SHORT COURSES AND LECTURES—*Concluded.*

Salaries and Expenses—

Rev. A. Michaud	$ 664 95
Jos. Pasquet	603 75
Rev. H. Bois	409 65
Rev. J. B. A. Allaire	460 20
J. G. Bouchard	719 31
J. D. Leclair	150 00
O. Gauvin	185 75
Jean Masson	400 00
Jos. Moren	751 65
A. Desilets	312 91
J. Masson	362 40
R. Gagnon	362 90
G. St. Pierre	451 36
J. Art. Paquet	150 00
J. L. A. Dupuis	505 40
Sundry persons, services, and expenses	2,367 39
Supplies and incidentals	279 23
Grant for Farmers' Special Course, St. Anne de la Pocatière	576 00
Oka Institute allowances for expenses	710 75
College of Agriculture, St. Thomas d'Aquin, grant for special course	222 00
	$ 10,645 60

QUEBEC.

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural purposes for the Years 1913, 1914, 1915, 1916, and Estimated Expenditure for 1917 and 1918.

Service.	1913 to June 30.	1914 to June 30.	1915 to June 30.	1916 to June 30.	1917 to June 30.	1918 to June 30 Estimated.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Civil Government Salaries and Contingencies	41,533 34	45,220 96	45,500 00	45,424 05	45,800 00	46,500 00
Agricultural Schools	20,208 39	18,534 99	29,863 09	30,000 00	30,000 00	30,000 00
Housekeeping Schools	10,000 00	18,500 00	10,290 29	8,518 00	12,000 00	10,000 00
Agricultural Societies	120,614 08	164,551 98	146,296 56	105,061 96	115,000 00	100,000 00
Farmers' Clubs or Agricultural Circles, including grant to S. Shore Railway	90,851 82	99,650 00	97,000 00	148,020 10	85,000 00	100,000 00
Council of Agriculture	4,529 03	3,665 83	2,787 99	2,272 68	3,000 00	3,000 00
Horticultural and Agricultural Societies, Montreal and Provincial	1,000 00	1,000 00	1,000 00	1,000 00	1,500 00	1,500 00
Veterinary Instruction	5,994 96	5,500 00	4,772 68	6,500 00	5,500 00	5,500 00
Dairying	74,441 50	76,000 00	67,676 14	94,451 64	97,000 00	99,000 00
Dairy Factories Inspection	.....	.....	.....	.....	20,000 00	
Provincial Laboratory	2,000 00	1,540 24	2,000 00	4,000 00	2,000 00	2,000 00
Lectures on Agriculture	6,537 56	7,029 44	5,406 09	3,927 21	9,000 00	9,000 00
Fruit Growing	11,856 29	10,865 48	6,580 36	4,605 33	5,000 00	5,000 00
Poultry Raising	3,000 00	3,000 00	2,099 14	2,126 47	3,000 00	3,000 00
Journal of Agriculture	29,000 00	29,000 00	27,000 00	26,624 30	27,000 00	27,000 00
Agricultural Merit	4,000 00	2,607 65	3,270 38	3,298 40	3,500 00	3,500 00
Exhibitions	32,000 00	32,000 00	31,000 00	30,500 00	32,000 00	30,000 00
Miscellaneous	100 00	100 00	100 00	35 00	100 00	100 00
School of Agriculture, Ste. Anne de la Pocatière—						
Towards construction	10,000 00	.....	.....	.....	.....	.....
Towards maintenance	10,000 00	10,000 00	.....	.....	.....	.....
Totals	477,666 98	528,766 57	482,642 72	516,365 14	496,400 00	475,100 00

MANITOBA.

AGREEMENT, 1916-17.

1	Instructors and Representatives	$ 17,668 19
2	Instruction and demonstration	16,197 03
3	Women's Work	16,634 78
4	Boys' and Girls' Clubs	12,950 18
5	Bulletins and Printing	5,649 82
6	Miscellaneous	1,667 20
		$ 70,767 20

Extension Service.

The work of the Extension Service is carried on in close co-operation with Agricultural Societies, Home Economics Societies, the Agricultural College and the Departments of Agriculture and Education, and is included under the following headings:—

1. Short Course Schools;
2. District Representatives;
3. Boys' and Girls' Clubs;
4. Agricultural Society Activities;
5. Home Economics Work;
6. Farmers' Week;
7. Institute Lectures.

Short Courses.

Greater attention was paid to the short course schools than in any previous year. Altogether 217 courses were held, these being divided as follows:—

A. Agricultural and Home Economics—17 courses, each of two weeks' duration.

B. Dressmaking, Millinery, Cooking, Canning and Home Nursing—169 courses, each of four or five days, for members of Home Economics societies.

C. Agricultural Woodworking—18 courses, each of two weeks' duration for the older members of Boys' and Girls' Clubs; given during the summer vacation.

D. 10 weeks short courses in Sewing and Cooking for the older girls who were enrolled in Boys' and Girls' Club work; held during the summer vacation.

The sessions at these courses ranged from 2½ to 3 hours each and the attendance was as follows:—

A.	836 men enrolled.	Aggregate attendance		$	15,158
	745 women	"	"		12,838
B.	4,187 "	"	"		37,702
	8,108 "	"	"		16,216
C.	360 boys	"	"		5,220
	230 girls	"	"		2,115
		Grand aggregate		$	83,309

Normal School Agricultural Course.

In co-operation with the Field Husbandry and Poultry Husbandry Departments of the College, and the Dairy Branch of the Department of Agriculture, lectures were given at the Brandon Normal School. Later in the term a three weeks short course in Field Husbandry was carried on. At the close of the course an examination was held and most of those in attendance received first year standing in their subject at the Agricultural College.

District Representatives.

Enlistments and retirements reduced the number of representatives from seven at the beginning to three at the end of the year. The work performed is similar to that carried on in other provinces, emphasis being placed on Short Course Schools, Boys' and Girls' Clubs, Field Demonstrations, Dairy and Poultry Improvement work, Live Stock judging, Plot Inspection, and toward the end of the year, the promotion of Rural Credits Associations among the farmers. In the short course work each representative took charge of a series of schools commencing about the end of November and continuing until March.

Boys' and Girls' Clubs.

In Boys' and Girls' Club work the Extension Service aided teachers and public school inspectors in encouraging all phases of agricultural and home economics work, and as a further assistance, the help of bankers, merchants, farmers, and various other organizations was sought and secured. Over 13,000 boys and girls were enrolled as members. The most popular lines of work were chicken raising, gardening, pig and calf raising, cookery and sewing. During the season 110 fairs were held at which over 11,000 members exhibited and fully 38,900 people attended. Two judges were supplied for practically all the fairs, one for girls' work and the other for boys' work. At the close of each fair, the exhibits were discussed and instructions given as to the best lines to adopt in making the following year's work a success.

Agricultural Society Activities.

While the Agricultural Societies give valuable assistance to all phases of extension work, special mention should be made of the standing crop and good farming competitions, seed grain fairs, dressed poultry shows, and ploughing matches. About thirty of each of the above were held. Judges were supplied for all of these competitions, and advantage was taken of the occasion to discuss farming problems. The judges supplied were either members of the Agricultural College staff or men who had a wide farming experience. During 1917 summer-fallow competitions will be conducted.

There are 72 Agricultural Societies in the province, with a membership of about 8,000; all of the societies held either a summer or a fall fair and from three to ten judges were supplied for each fair, mainly for the live stock classes. An increasing number are asking for extension service judges for women's work.

Home Economics Societies.

There are now over 100 societies in the province, with a membership of 4,000. While the energies of the members are being devoted mainly to Red Cross work, sufficient time was spared for attendance at short courses, as well as

individual lectures and demonstrations. During the greater part of the year, from six to eight members of the staff devoted all their attention to the Home Economics Societies, mainly in giving demonstration lectures, and in conducting. short courses.

During July three district Home Economics Conventions were held, at Dauphin, Boissevain, and Portage la Prairie, respectively. The programme for each of these Conventions was supplied for the most part by members of societies living within the district, which proved to be a splendid means of developing the latent talent of a large number of members

Farmers' Week.

During the Winnipeg Bonspiel, held in February, the various farmers' organizations hold their annual conventions. The Provincial Seed Grain Fair is also held at this time, and the Extension Department co-operates in making these meetings as practical and helpful as possible. The attendance was between 1,400 and 1,500.

Educational Exhibits.

The Extension Service in co-operation with the College placed Educational Exhibits at a number of Agricultural Society Fairs as well as at the Brandon Exhibition and the International Soil Products Exhibition at Peoria, Illinois.

Dairy Produce Grading.

This work is rapidly increasing each year. During the season of 1914 2,223 samples of creamery butter were examined and graded, representing 26,676 fifty-six pound boxes; 1915, 3,780 samples, representing 45,360 boxes; 1916, 4,518 samples, representing 67,770 boxes. Defects are pointed out and suggestions made for improving the quality. Sixty-eight car loads of creamery butter were exported during the year and a government grade certificate accompanied practically every car. The grading of cream and butter has been the means of greatly improving the standard of the creamery output.

To encourage and to further stimulate their best efforts in cream grading, pasteurization, and all other essentials necessary for the production of as large a percentage of "First Grade Butter" and "Specials" as possible, premiums were paid to creameries on the basis of quality of product.

Dairy instruction was continued in the northern part of the province, chiefly among the Ruthenians. About one hundred meetings were held, and over a thousand farm homes visited.

Publications.

The Publications Branch edited and supervised the printing and, to a large extent, the distribution of all agricultural literature published under the auspices of the Manitoba Department of Agriculture, whether the expense of publication was borne by the Dominion grant or paid for by Provincial moneys.

During the year 1916 from March 31 to December 31, the following publications were issued:—

	No. of Copies.
Bulletins	46,000
Circulars	30,000
Posters and Placards	15,000
Printed Programmes and folders	23,000
Printed forms	23,000

Circular letters and news letters, very many thousands.

Early in the year 1916 a mailing machine was installed and mailing lists have been compiled and kept revised. The use of this machine enabled this Branch to conduct a great deal of mailing with expedition.

Very free use was made of circular letters, both in the way of collecting information and also of disseminating it. Conspicuously useful in this direction was a news service, by means of which every newspaper in Manitoba interested in agricultural progress was kept supplied with news on timely subjects. The news items supplied in these letters were very widely published. The effort to supply information was not confined to the English papers, but arrangements were made whereby a series of specially prepared agricultural articles were published in leading papers printed in the Swedish, Norwegian, French, Icelandic, German, Ruthenian, and Polish languages.

Demonstration Farms.

In the report on the Agricultural Instruction Act for 1915–16 there appeared a statement showing the returns for the year from the fourteen demonstration farms established in 1913. One of these, situated at Killarney, consisting of approximately seventy-five acres, was purchased to be developed as a permanent Demonstration Station in the interests of horticultural work. Each of the other thirteen consisted of forty acres, secured under a ten-year lease, to be used for demonstrating the value of good cultivation, careful selection of seed, and the suitablility of certain crop rotations as a means of increasing production in the province. Early in the year 1916 the Provincial Minister of Agriculture cancelled the agreements with the owners and operators of these farms, and hence their use as demonstration plots was discontinued.

Work on the Killarney Provincial Demonstration Farm is still in its early stages and not sufficiently advanced to report definite results. An eight-year rotation and a small amount of cultural work is all the cereal work that is being carried on, besides the production of feed for the live stock. Owing to the bad season, the crops were below the average. The grain in many cases was so poor that it was not threshed, and some that was threshed yielded very poorly. The early sown grain in every case was fairly good, the wheat yielding as high as 27 bushels and 20 pounds, oats 54 bushels, and barley 50. The late grain yielded: Wheat, 2½ bushels; oats, 22; barley, 24, spring rye, 30 bushels and 20 pounds. The crop of fodder corn was a success, yields running approximately 12 tons per acre.

Poultry Work.

A great deal of the work of this department consists of lectures to Boys' and Girls' Clubs, Dressed Poultry Fairs, Short Courses, and Normal Schools. Ten lectures were given to Boys' and Girls' Clubs during September and October; ten to Dressed Poultry Shows during November and December; sixty-one lectures at Short Course meetings, and eleven lectures to teachers at the Brandon and Portage la Prairie Normal Schools.

Officers Provided by Dominion Grant.

Instructor,	Gas Engines	A. C. Campbell.
"	Bee-keeping	R. M. Muckle.
"	Poultry	J. E. Bergey.
"	Dairying	W. J. Crow.
"	"	D. E. Mackenzie.
"	"	C. S. Prodan.

Superintendent Killarney Demonstration Farm, Nelson S. Smith.
District Representative ..... J. H. Kiteley.
" " ..... Fred F. Parkinson.
" " ..... W. R. Roberts.
Home Economics Lecturer ..... Margaret Smith.
" " ..... E. Crawford.
" " ..... Lillian Clarke.
" " ..... Caroline G. Senior.
" " ..... R. M. Atkinson.
Stenographer, College Extension Division....
Accountant ..... J. P. Grant (part salary).

MANITOBA.

Grant of 1916–17.

Summary Statement, April 1, 1916, to March 31, 1917.

No.	Classification.	Balances April 1, 1916.	Grant 2nd Variation.	Refunds.	Total Credits.	Expenditure.	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	Instructors and Representatives...	6,831 81	17,668 19	.....	24,500 00	24,272 37	227 63
2	Instruction and Demonstration....	13,904 01	.....	.....	.....	.....	.....
		* 2,500 00	16,197 03	489 75	33,090 79	19,607 75	1,483 04
	($12,000.00 for subsequent agreement).....	.....	.....	.....	12,000 00		
					21,090 79		
3	Women's Work.....	765 22	16,634 78	.....	17,400 00	17,254 46	145 54
4	Boys' and Girls' Clubs.....	533 60	12,950 18	.....	13,483 78	13,450 83	32 95
5	Bulletins and printing.....	850 18	5,649 82	.....	6,500 00	6,320 59	179 41
6	Miscellaneous.....	1,603 56	1,667 20	.....	3,270 76	2,574 18	696 58
		26,988 38	70,767 20	489 75	86,245 33	83,480 18	2,765 15
				Plus....	12,000 00	Plus....	12,000 00
					98,245 33		14,765 15

(*From School Agriculture 1915–16.)

1. INSTRUCTORS AND REPRESENTATIVES.

Grant 1916–17	$ 17,668 19	
Balance April 1	6,831 81	
Expended March 31, 1917		$ 24,272 37
Balance forward		227 63
Salaries and Expenses	$ 24,500 00	$ 24,500 00

1. INSTRUCTORS AND REPRESENTATIVES—*Concluded.*

F. S. Jacobs, Prof. Animal Husbandry	$	249 96
A. J. Galbraith, Instructor in Chemistry		1,283 31
Miss C. L. Groff, Instructor in Household Arts		866 64
J. A. Neilson, Secretary, Horticulture and Forestry		777 30
R. M. Muckle, Provincial Apiarist		1,462 51
J. E. Bergey, Demonstrator Poultry		533 32
L. A. Gibson, Dairy Instructor		1,587 34
W. J. Crowe, Dairy Instructor		2,348 35
W. J. G. Weiner, District Representative		2,064 61
L. V. Lohr, District Representative		1,195 46
N. S. Smith, Provincial Apiarist		2,118 87
W. R. Roberts, Secretary, Horticulture and Forestry		2,053 89
F. J. Hudson, District Representative		1,277 48
J. R. Bell, " "		1,743 13
J. H. Kitely, " "		882 50
F F. Parkinson, " "		1,302 12
A. Skorobohocy, " "		514 58
F. F. Boresky, " "		462 04
S. J. Sigfuson, " "		598 34
J. E. Sirrett, " "		263 82
A. C. Campbell, " "		375 00
R. W. Murchie, " "		300 00
Incidentals		11 80
	$	24,272 37

2. INSTRUCTION AND DEMONSTRATION.

Grant 1916-17 ($12,000.00 for subsequent agreement)	$ 16,197 03		
Balances April 1, 1916, Instruction and Demonstration	13,904 01		
School Agriculture, 1915-16	2,500 00		
Refunds	489 75		
Expended March 31, 1917		$	19,607 75
Balance forward			1,483 04
Balance forward (subsequent agreement)			12,000 00
	$ 33,090 79	$	33,090 79
Killarney Farm—			
Buildings	$ 2,197 73		
Live Stock	387 18		
Equipment	1,267 56		
Maintenance and Supplies, Labour	2,892 57		
		$	6,745 04
Short Courses			6,428 39
Tile drainage M. A. C.			2,192 12
District Representatives Expenses			1,388 18
Expenses special judges and lecturers			514 80
Equipment			130 13
Printing, stationery, incidentals			601 59
Baldur Farm			40 70
Grant Brandon Poultry Show			300 00
Prizes, Dressed Poultry			685 20
Seed Grain Prizes			84 05
Farmers' Week Prizes			64 00
Boys' and Girls' Club Prizes			25 00
Butter Contest Prizes			237 12
Wool Marketing			120 43
Incidentals			51 00
		$	19,607 75

3. WOMEN'S WORK.

Grant, 1916-17	$ 16,634 78		
Balance April 1, 1916	765 22		
Expended March 31, 1917		$	17,254 46
Balance forward			145 54
	$ 17,400 00	$	17,400 00

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3. WOMEN'S WORK—*Concluded.*

Salaries and expenses—		
Miss E. Crawford	$ 2,338 41	
Hattie M. Gowsell	892 85	
Margaret Smith	2,205 36	
Caroline C. Senior	1,716 31	
L. Clark	1,695 00	
R. M. Atkinson	861 32	
Mrs. C. Graham	1,296 88	
A. Hay	925 00	
Mildred Tew	514 75	
Lecturers and Demonstrators—		
Sundry persons	3,025 00	
Supplies and Incidentals	214 09	
Grants to Home Economics Societies	1,239 07	
Grants Exchange Libraries	75 00	
Prizes, Farm-house plans	117 90	
Printing, etc	137 52	
		$ 17,254 46

4. BOYS' AND GIRLS' CLUBS.

Grant, 1916–17	$ 12,950 18	
Balance April 1, 1916	533 60	
Expended March 31, 1917		$ 13,450 83
Balance forward		32 95
	$ 13,483 78	$ 13,483 78
Services and Expenses, Sundry persons, judges, lecturers, etc		$ 8,999 09
Grants		838 70
Prizes		2,445 95
Printing		184 50
Supplies and incidentals		982 59
		$ 13,450 83

5. BULLETINS AND PRINTING.

Grant, 1916–17	$ 5,649 82	
Balance, April 1, 1916	850 18	
Expended, March 31, 1917		$ 6,320 59
Balance forward		179 41
	$ 6,500 00	$ 6,500 00
Geo. Batho, salary	$ 1,874 97	
Printing bulletins, circulars, and posters	4,303 18	
Advertising	142 44	
	$ 6,320 59	

6. MISCELLANEOUS.

Grant, 1916–17	$ 1,667 20	
Balance, April 1, 1916	1,603 56	
Expended, March 31, 1917		$ 2,574 18
Balance forward		696 58
	$ 3,270 76	$ 3,270 76
Equipment—		
Addressograph and plates	$ 1,185 66	
Miscellaneous, including postage	1,088 52	
Salary, part, Jas. P. Grant, Accountant	300 00	
	$ 2,574 18	

AGRICULTURAL AID GRANT 1912–1913.

EXPENDITURE TO MAY 31, 1916.

Demonstration Farms	$	5,425 90
Demonstration Trains		3,278 45
Agricultural meetings, lectures		1,046 10
Ploughing matches		230 98
Poultry Industry		985 20
Grants to Agricultural Societies		18,001 65
	$	28,968 28
Balance unexpended		2,901 33
	$	31,869 61

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the Years 1913, 1914, 1915 and 1916 and Appropriations for 1917.

Service.	1913 To Nov. 30	1914 To Nov. 30.	1915 To Nov. 30.	1916 To Nov. 30.
	$ cts.	$ cts.	$ cts.	$ cts.
Department—Salaries	14,729 97	14,700 00	14,555 00	12,522 26
Office expenses	1,675 28	1,496 07	1,727 81	1,990 39
Agricultural Societies and Farmers' Institutes	41,937 40	39,426 53	48,145 78	45,787 69
General Agriculture	7,309 06	8,315 60	9,799 69	23,429 90
Grants to Live Stock Associations, Winter Fairs, Exhibitions, and Societies (Dom. Fair, $20,000.00, special in 1913)	36,473 00	19,229 00	5,707 72	12,895 82
Manitoba Agricultural College—				
Salaries	68,393 02	76,190 00	103,709 95	101,369 45
Maintenance	36,461 85	52,172 71	65,791 83	75,246 52
Fuel	12,537 55	40,342 06	35,337 25	69,804 15
Totals	220,517 13	251,872 08	284,775 03	343,046 19
Revenue—				
Agricultural College fees, etc	16,509 91	18,175 77	42,876 10	63,146 01
Net total	204,007 22	233,696 31	241,898 93	279,900 18

SASKATCHEWAN.

AGREEMENT, 1916-17.

1.	College of Agriculture	$ 22,800 00
2.	Instructors, Directors, Superintendents and District Representatives—Salaries and Expenses	30,700 00
3.	Instruction and Demonstration in live stock, dairying, soils, crops, etc., including Short Courses	7,000 00
4.	Women's Work	4,500 00
5.	Bulletins and Miscellaneous printing	3,900 00
6.	Agricultural instruction in Public, High, and Normal Schools—Nature Study, School Gardens, Domestic Science, Training of Teachers	4,500 00
7.	Contingencies and miscellaneous	1,469 76
	Total	$ 74,869 76

Better Farming Train.

The number of places visited by the "Better Farming Train" in 1916 was 56, the distance travelled was 810 miles over Canadian Northern lines; the attendance was 22,673, made up of 8,245 men, 13,392 women and 5,455 children. The total cost was $4,787. As in previous years, the college furnished the live stock for demonstration purposes as well as many other exhibits, and also supplied several members of its regular staff, who acted as lecturers and demonstrators. The railway company supplied the rolling stock and operated the train free of charge.

Short Courses.

Under the Extension Division of the College of Agriculture, 59 Short Courses in Agriculture were held at 51 points. The aggregate attendance was 7,311. At a number of leading points separate classes were held for Normal School students with a view to awakening greater interest in Agriculture in the minds of those who intend entering the teaching profession. At the College of Agriculture, a two-weeks' course in traction engineering was held, with a regular attendance of 195 students. Apart from this, no short courses in agriculture were provided at the college during the year, the week usually devoted to this object being given over to the annual convention of live-stock breeders. Women's Institute courses were held during the winter at fifteen points, the total attendance being 756.

Agricultural and Household Science Education.

The policy of the Department of Education to extend and encourage instruction in Agriculture and Household Science in the Schools was continued under the direction of the Agricultural Instruction Committee. The Director of Household Science, Miss F. A. Twiss, was given the assistance of Miss H. McMurtry, who will instruct in Household Science at the Normal School at Regina. At the Saskatoon Normal School, the Director of Women's Work, Miss A. Delury will undertake similar duties.

Ninety-eight teachers took the course in Agriculture, conducted at the University, and twenty-one took the Household Science Course. The railway fares of teachers who satisfactorily complete a course are paid, and living accommodation is provided.

Seventy-five per cent of the schools of the province this year attempted garden work, and increased interest is being shown in the planting of school grounds. A bulletin of 70 pages entitled "The School Garden" was issued and distributed.

The number of School Fairs held during the year was 84, being exactly double that of the year previous. Many of these fairs were organized by Rural Education Associations. About 40 of these associations have been organized since 1915, with the object of promoting school fairs, contests for boys and girls and young people's clubs.

Co-operation and Marketing.

The work of the Co-operation division of the Department of Agriculture is financed by the grant. During the year, 91 co-operative producing, marketing and purchasing associations were registered under the Agricultural Co-operative Associations Act, making a total of 352 since the Act first came into effect in December 1913. Throughout the year speakers were supplied to assist groups of farmers in organizing.

Continuing the co-operative wool marketing work begun in 1914, the division proceeded to act as a marketing agency for producers. Under arrangement with the Dominion Live Stock Branch expert graders were supplied. Poultry marketing stations at Regina and Saskatoon were operated from November to January, as in previous years, the project being advertised by posters and leaflets.

The division again undertook the work of supplying flower and vegetable seed for school and home gardens at a nominal cost. Upwards of 400 schools were supplied with seeds of varieties known to be suited to Saskatchewan conditions.

University of Saskatchewan.

The work performed by the College of Agriculture of the University of Saskatchewan comprising College Extension, investigation and research, was outlined somewhat fully in the report of 1915–16, pp. 71–72. In the fields of investigation and research the work was continued in 1916–17 on the lines indicated in that report, and it is unnecessary to again refer to it in detail. The nature of the Extension work carried on is indicated in the summary that follows:—

Summary of Activities.

During the year ended June 30, 1917, there were held at the Agricultural College of the University of Saskatchewan and at various points in the Province the following:—

	Attendance.	
At the University—		
Summer School	123	
Agricultural Societies' Convention	200	
Live Stock Convention	120	
Dairymen's Convention	100	
Short Course in Traction Engineering	195	
Veterinary Short Course	50	
Short Courses for Returned Soldiers	76	
Short Course for Young Girls	80	
Home-makers' Convention in 1917	300	
Excursions to the College	3,000	
		4,244
At various points in the Province—		
13 Spring Shows	250	
62 Ploughing matches	7,000	
100 Junior exhibitions for children	15,000	
60 Seed Fairs	5,500	
15 Conferences with home-makers	756	
59 Short Courses for farmers	7,300	
1 Better Farming Special, in 1917	40,000	
124 Exhibitions (excluding those at Regina, Saskatoon, Battleford, Prince Albert, and Weyburn)	12,000	
		87,806
		92,050

OFFICERS PROVIDED BY THE DOMINION GRANT.

(A) Officers, regularly employed, whose salaries are paid from the Agricultural Instruction Grant.

Field Representative, J. W. Hunter, Live Stock Branch, Department of Agriculture, Regina.
Dairy Inspector, J. A. McDonald, Department of Agriculture, Regina.
Dairy Inspector, P. E. Reed, Department of Agriculture, Regina.
Field Representative, L. C. Wirtz, Dairy Branch, Department of Agriculture, Wadena.
District Representative, J. G. Rayner, North Battleford.
Professor of Cereal Husbandry, G. H. Cutler, Saskatoon.
Professor of Animal Husbandry, A. M. Shaw, Saskatoon.
Assistant Professor of Animal Husbandry, W. H. J. Tisdale, Saskatoon.
Assistant Professor of Agricultural Engineering, J. MacGregor Smith, Saskatoon.
Professor of Poultry Husbandry, R. K. Baker, Saskatoon.
Assistant Professor of Dairying, K. G. MacKay, Saskatoon.
Assistant Professor of Physics, A. E. Hennings, Saskatoon.
Assistant Professor of Chemistry, T. Thorvaldson, Saskatoon.
Director of Women's Work, Miss A. Delury.
Lecturer for Homemakers' Clubs, Miss Daisy Harrison.
Director, School Agriculture, F. W. Bates, Department of Education, Saskatoon.
Director, School Agriculture, A. W. Cocks, Department of Education, Regina.
Director, Household Science, Miss F. A. Twiss, Department of Education, Regina.
Assistant Household Science, Miss Helen McMurtry, Department of Education, Regina.

(B) Officers, regularly employed, whose salaries are paid in part from the Agricultural Instruction Grant.

Director, Co-operative Work, W. W. Thompson, Department of Agriculture, Regina.
Assistant Director, Co-operative Work, *W. G. Mawhinney, Department of Agriculture, Regina.

(C) Officers employed a part of each year whose salaries are paid from the Agricultural Instruction Grant.

Field Representative, J. S. Fulton, Live Stock Branch, Department of Agriculture, Regina.
Field Representative, M. P. Tullis, Weeds Branch, Department of Agriculture, Saskatoon.
Field Representative, Wm. Thomson, Weeds Branch, Department of Agriculture, Veregin, Sask.
Field Representative, R. J. Lewis, Weeds Branch, Department of Agriculture, Vandura, Sask.
Field Representative, W. E. Walker, Weeds Branch, Department of Agriculture.
Field Representative, J. S. Naylor, Weeds Branch, Department of Agriculture.
Field Representative, A. J. McPhail, Live Stock Branch, Department of Agriculture.

*Enlisted

SASKATCHEWAN.

Grant of 1915–16.

Summary Statement, April 1, 1916, to September 30, 1916.

No.	Classification.	April 1, 1916, Balances.	Transfer.	Total Credits.	Expenditure.	Cr. Balance., Sept. 30, 1916.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	College of Agriculture					
4	Women's Work	13,614 43		13,614 43	13,473 85	140 58
2	Instructors, directors, superintendents and district representatives, salaries and expenses	19,686 37		19,686 37	11,251 35	8,435 02
3	Instruction and demonstration in live stock, dairying, soils, crops, etc., including short courses	5,592 02		5,592 02	2,111 92	3,480 10
5	Boy's and Girl's work	1,100 00		1,100 00	1,100 00	
6	Bulletins and miscellaneous payments	1,746 97		1,746 97	1,608 89	138 08
7	Instruction in public, high and normal schools in agriculture, nature study and domestic science, school gardens, training of teachers	878 30	1,100 00	1,978 30	1,282 02	696 28
8	Contingencies and miscellaneous	849 01		849 01	722 61	126 40
	Interest accrued	114 24		114 24		114 24
		43,581 34	1,100 00	44,681 34	31,350 64	13,130 70

1. and 4.—COLLEGE OF AGRICULTURE.

Balance, brought forward, April 1, 1916	$ 13,614 43	
Expended to September 30, 1916		$ 13,473 85
Balance on hand, September 30, 1916		140 58
	$ 13,614 43	$ 13,614 43

Details.

Instruction and Research—	
Salaries—	
Seven professors, and assistants, part time	$ 3,903 72
Two professors, full time	2,050 00
Four assistants in Field Husbandry Work	1,619 14
Extension Work—	
Salaries—	
Six professors and assistants, part time	2,888 74
Director and lecturer in Women's work	1,435 12
Expenses, women's work	1,577 13
	$ 13,473 85

2.—INSTRUCTORS, DIRECTORS, SUPERINTENDENTS AND DISTRICT REPRESENTATIVES—SALARIES AND EXPENSES.

Balance on hand, March 31, 1916	$ 19,686 37	$
Expended to September 30, 1916		11,251 35
Balance on hand, September 30, 1916		8,435 02
	$ 19,686 37	$ 19,686 37

DEPARTMENT OF AGRICULTURE.

	Salary.	Expenses.	
Live Stock—			
J. W. Hunter, Field Representative	$ 600 00	$ 644 45	
J. S. Fulton, Field Representative	493 33	621 80	$ 2,359 58
Weeds—			
W. W. Thomson	$	$ 110 34	
W. E. Walker		30 00	
M. P. Tullis		97 80	
J. S. Naylor	400 00	326 60	
R. E. Lewis	203 23	254 35	
			1,422 32
Dairying—			
J. A. McDonald	$ 650 00		
P. Reed	750 00	$ 234 55	
L. C. Wirtz	500 00		
Dairy Special		159 40	
Dairy Branch (Butter)		17 36	
			2,311 31
Co-operative Work—			
W. W. Thomson	$	$ 8 04	
W. G. Mawhinney	466 67		474 71
District Representative—			
J. G. Rayner	$ 533 32	$	533 32

EDUCATION DEPARTMENT.

Miss F. A. Twiss	$ 833 36	$ 206 45	
A. W. Cocks	1,200 00	346 65	
F. W. Bates	1,200 00	263 65	
H. McMurtry	100 00		4,150 11
			$ 11,251 35

3.—INSTRUCTION AND DEMONSTRATION.

Balance, April 1, 1916		$ 5,592 02	
Expended			$ 2,111 92
Balance, October 1, 1916			3,480 10
		$ 5,592 02	$ 5,592 02
Better Farming Train—			
Salaries	$ 1,119 50	$	
Maintenance	571 96		
Equipment	85 26	1,776 72	
District Representative—			
J. G. Rayner, expenses		335 20	
		$ 2,111 92	

6.—BULLETINS AND PRINTING.

Balance on hand, March 31, 1916	$ 1,746 97		
Expended to September 30, 1916		$ 1,608 89	
Balance		138 08	
	$ 1,746 97	$ 1,746 97	
Department of Agriculture—			
Co-operative Work	$ 287 24		
Better Farming Train	651 14		
Dairying	257 23	$ 1,195 61	
Education Department—			
Office supplies	$ 30 98		
Etching and half tone	6 50		
Multigraphing circular letters	121 59		
Postage for distribution	175 00		
Bulletin No. 6 ,The School Garden	566 00		
Bulletin No. 5, School Fairs	76 01	976 08	
		$ 2,171 69	
Less interest		562 80	
		$ 1,608 89	

7.—SCHOOL INSTRUCTION IN AGRICULTURE.

Balance, March 30, 1916		$ 878 30		
Boys' and girls' work		1,100 00		
Expended to September 30, 1916			$ 1,282 02	
Balance, October 1, 1916			696 28	
		$ 1,978 30	$ 1,978 30	

Instruction in Public High and Normal Schools in Agriculture, Nature Study and Domestic Science, School Gardens, Training for Teachers.

Seeds for Normal School	$ 8 06		
Normal School Garden (Labour)	188 02		
R. F. Meadows, Special Lecturer	7 55		
D. P. McColl, Special Lecturer	4 85		
J. H. H. Davies, Demonstrator	6 10		
David Swan, Demonstrator Teachers' Convention, Prince Albert	38 80		
Summer Schools—			
Regina (1915)	11 38		
Saskatoon (1916)—			
Fares, etc. to teachers attending	680 10		
Supplies	42 71		
Isabel Shaw, teacher, Household Science	121 15		
Helen McMurtry, teacher, Household Science	125 50		
Fannie Twiss, Director Household Science	47 80	$	1,282 02

8.—CONTINGENCIES AND MISCELLANEOUS.

Balance, April 1, 1916	$ 849 01		
Expended to April 1, 1916		$	722 61
Balance, October 1, 1916			126 40
	$ 849 01	$	849 01

Agricultural Department—			
Co-operative work	$ 53 76		
Dairy	62 90		
Better Farming Train	25 18		
Saskatchewan Veterinary Association	500 00	$ 641 84	
Education Department—			
School Garden Model	$ 12 96		
Lantern slides	37 06		
Apparatus for Domestic Science, etc.	22 55		
Agricultural Instruction Committee	8 20	80 77	
		$722 61	

SASKATCHEWAN.

Grant of 1916–17.

Summary Statement, October 1, 1916, to March 31, 1917.

Classification.	Balances, October 1, 1916.	Grant.	Refunds	Total Credits.	Expenditure.	Cr. Balances.
No.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1. College of Agriculture	.....	22,800 00	}	27,440 58	13,796 01	13,644 57
4. Women's work	140 58	4,500 00				
2. Instructors, directors, superintendents, and district representatives: salaries and expenses	8,435 02	30,700 00	.....	39,135 02	14,311 39	24,823 63
3. Instruction and demonstration in live stock, dairying, soils, crops, etc., including short courses	3,480 10	7,000 00	.....	10,480 10	3,145 26	7,334 84
5. Bulletins and miscellaneous printing	138 08	3,900 00	.....	4,038 08	591 45	3,446 63
6. Instruction in public, high, and normal schools in agriculture, nature study, and domestic science, school gardens, training of teachers	696 28	4,500 00	20 40	5,216 68	131 50	5,085 18
7. Contingencies and miscellaneous	126 40	1,469 76	.....	1,596 16	174 12	1,422 04
Interest accrued	114 24	.....	104 72	218 96	.....	218 96
	13,130 70	74,869 76	125 12	88,125 58	32,149 73	55,975 85

Detailed Statement of Expenditures, October 1, 1916 to March 31, 1917.

1 and 4. COLLEGE OF AGRICULTURE.

Grant, 1916–17—College of Agriculture	$22,800 00	
Women's Work	4,500 00	
Balance brought forward, October 1, 1916	140 58	
Expended to March 31, 1917		$13,796 01
Balance on hand, March 31, 1917		13,644 57
	$27,440 58	$27,440 58

Details.

	$ cts.
Instruction and Research—	
Salaries—	
Seven Professors and assistants, part time	4,374 90
Two professors, full time	2,099 94
Four assistants in Field Husbandry work	1,141 12
Four assistants in Soil analysis	735 00
Extension Work—	
Salaries and expenses—	
Six Professors and assistants, part time	2,974 98
Director and Lecturer in Women's Work	1,215 00
Expenses, Women's Work	1,255 07
	$13,796 01

2. INSTRUCTORS, DIRECTORS, SUPERINTENDENTS, AND DISTRICT REPRESENTATIVES—SALARIES AND EXPENSES.

	$ cts.	$ cts.
Grant, 1916–17	30,700 00	
Balance on hand, October 1, 1917	8,435 02	
Expended, March 31, 1917		14,311 39
Balance on hand, March 31, 1917		24,823 62
	39,135 02	39,135 02

	Salary.	Expenses.	
DEPARTMENT OF AGRICULTURE.	$ cts.	$ cts.	$ cts.
Live Stock—			
J. W. Hunter	600 00	439 19	
A. J. McPhail	375 00	.....	
J. S. Fulton	100 00	36 65	
M. P. Revanal	.....	6 00	
J. W. Leedy	.....	76 50	1,687 34
Weeds—			
W. E. Walker	100 00	118 00	
M. P. Tullis	200 00	87 90	
Wm. Thompson	400 00	394 50	
J. S. Naylor	.....	228 12	
Incidentals	.....	20 80	1,549 32
Dairying—			
J. A. McDonald	700 00	282 50	
P. E. Reed	875 00	260 10	
L. C. Wirtz	700 00	126 93	
F. M. Logan	450 00		
D. McLeod	349 98	153 90	
H. J. Crowe	300 00	.....	4,198 41
Co-operative Work—			
W. W. Thomson	774 42	148 20	
Incidentals	.....	106 29	1,031 91
District Representative—			
J. G. Rayner	933 31	117 80	1,051 11
EDUCATION DEPARTMENT.			
Miss F. A. Twiss	900 02	301 14	
A. W. Cocks	1,200 00	173 81	
F. W Bates	1,200 00	382 85	
Miss H. McMurtry	635 48	.....	4,793 30
			14,311 39

3. INSTRUCTION AND DEMONSTRATION.

	$ cts.	$ cts.
Grant 1916–17	7,000 00	
Balance on hand, April 1, 1916	3,480 10	
Expended, April 1, 1917		3,145 26
Balance on hand, April 1, 1917		7,334 84
	10,480 10	10,480 10
Better Farming Train—		
Sustenance and travelling expenses	2,353 96	
Equipment	791 30	
	3,145 26	

5. BULLETINS AND PRINTING.

Grant, 1916–17	3,900 00	
Balance, October 1, 1916	138 08	
Expenditure		591 45
Balance, April 1, 1917		3,446 63
	4,038 08	4,038 08

5. BULLETINS AND PRINTING—*Concluded.*

Department of Agriculture.	$ cts.	$ cts.
Printing Bulletins and Circulars for Co-operative Work—		
King's Printer	295 55	
Saturday Press and Prairie Farm	36 25	
		351 80
Education Department.		
Bulletins and Miscellaneous Printing—		
Office supplies	72 35	
Multigraphing circular letters	5 35	
Postage on publications	100 00	
Rural Educational Monthly (Jan.)	46 00	
Report forms, Director of Household Science	15 95	
		239 65
		591 45

6.—SCHOOL INSTRUCTION IN AGRICULTURE.

	$ cts.	$ cts.
Grant, 1916–17	4,500 00	
Balance, Oct. 1, 1916	696 28	
Expended, March 31, 1917		111 10
Balance, April 1, 1917		5,085 18
	5,196 28	5,196 28

Instruction in Public, High and Normal Schools in Agriculture, Nature Study, and Domestic Science, School Gardens, Training of Teachers.

Summer School, Saskatoon, 1916—

	$ cts.	$ cts.
Janitor, Victoria School, Saskatoon	25 00	
Railway fares of Normal students to Indian Head to visit Experimental Farm	106 50	131 50
Less refunds		20 40
		111 10

7.—CONTINGENCIES AND MISCELLANEOUS.

	$ cts.	$ cts.
Grant, 1916–17	1,469 76	
Balance, Oct. 1, 1916	126 40	
Expenditure, Mar. 31, 1917		174 12
Balance, April 1, 1917		1,422 04
	1,596 16	1,596 16

Education Department—		
School Garden Model	0 50	
Lantern Slides	4 25	
Agricultural Institute Committee	41 30	
Chemical supplies	1 50	
Express	4 35	
Periodicals and books	22 92	
Telephone rental, Miss Twiss	20 50	
School Fairs		
Detail	78 80	174 12
		174 12

Comparative Statement of Expenditure of Provincial Funds for Agricultural purposes for the Years 1913, 1914, 1915, and estimated for 1916 and 1917

Service.	1913–14. To April 30.	1914–15. To April 30.	1915–16. To April 30.	1916–17. To April 30 (estimated)	1917–18. To April 30 (estimated)
	14 mths. $ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Department—Salaries and general expense	41,186 38	39,536 09	66,347 93	40,795 00	34,830 00
General Agricultural Interests, Agricultural Societies, Provincial Organization, Grants, Contingencies	56,148 90	67,739 52	68,549 34	67,600 00	67,600 00
Live Stock Industry	68,575 84	23,593 85	35,636 95	30,300 00	32,700 00
Dairy and Poultry Industries	471,272 25	84,600 63	87,986 43	71,100 00	**16,300 00
Agricultural Statistics and Publicity	33,413 43	36,404 16	26,635 82	26,900 00	21,600 00
Bacteriological Laboratory	8,111 11	8,443 74	8,040 88	8,400 00	.....
Weed Control and Game Protection	18,398 52	19,588 94	18,272 69	8,900 00 Weeds 10,100 00 Game	10,400 00 11,200 00
Bureau of Labour—					
Farm and Domestic labour and factory inspection	55,542 00	8,968 35	7,594 60	9,600 00	10,100 00
Miscellaneous Service —					
*Vital statistics, Natural History Scholarships, Brands, etc	27,892 19	24,352 72	21,235 31	9,100 00	1,100 00
Totals	780,540 62	337,228 00	340,299 95	282,795 00	205,830 00
Less Revenue	552,340 78	179,291 51	104,283 41	95,500 00	37,000 00
	228,199 84	175,936 49	236,016 54	187,295 00	168,830 00

*Note.—Vital Statistics transferred to Bureau of Public Health at beginning of fiscal year 1914-15.
**Advances to creameries, $60,000 for purchase of milk and cream not included in 1917-18.

ALBERTA

AGREEMENT, 1916–17.

	$ cts.	$ cts.
1. Schools of Agriculture—		
Maintenance	34,000 00	
Equipment	1,200 00	
		35,200 00
2. Instructors, Demonstrators and District Agents		7,500 00
3. Instruction and Demonstration—		
Demonstration Farms	6,500 00	
Demonstration Trains	5,000 00	
Dairying	2,000 00	
		13,500 00
4. Women's Work		3,000 00
5. Bulletins, Publications, Printing		2,500 00
6. Miscellaneous		47 22
		61,747 22

Schools of Agriculture.

The three schools located at Claresholm, Olds and Vermilion respectively, have continued to have a good attendance of both boys and girls in spite of the fact that many young men have enlisted. The actual attendance in 1916–17 was as follows:—

Claresholm	70 boys.	40 girls.
Olds	64 boys.	55 girls.
Vermilion	47 boys.	19 girls.

The staffs from each of the schools were engaged during the summer in extension work of various kinds. Five of the men acted as District Agents, carrying on club work particularly. The instructors acted as judges at fairs, addressed meetings over the country and carried on different kinds of investigational work including experimental work in the field husbandry at each of the schools. The female teachers were employed in addressing women's institute meetings.

Instruction and Demonstration.

Under the heading of Demonstration Farms, the full amount of this vote was spent in the purchase of live stock, especially in securing good bulls as herd headers for the different farms. Some of the choicest male animals that it was possible to buy were secured including the dairy shorthorn bull " Director ", now located at the Olds Demonstration Farm, and the Holstein bull, " King Segis Pontiac Alcartra 11th ", located at the Stony Plain Farm. Some good females were purchased also.

Demonstration Train.

This train was operated during July and August and covered about 65 places. The three lines of railway furnished the equipment including coaches, engine, diner and sleeper, each railway hauling the train free of charge. The heads of the various branches of the Department, including the principals of the Schools of Agriculture, prepared the exhibits. Either the head of each branch or an assistant accompanied the train through the entire period, giving demonstrations and lectures. A large number of people visited the train and very encouraging comments were made by those who attended, respecting the exhibits and the kind of information given.

Dairying.

The District Agents carried on cow testing work during the summer, encouraging people to weigh and test the milk of their cows. The work consisted principally of actually gathering the samples, checking the weights and making the tests.

Women's Work.

The Women's Institute branch of the Department engaged actively in organizing institutes, in holding short courses and in giving lectures and demonstrations. This work has progressed very rapidly and is providing valuable education, particularly to those who live some distance from centres.

Officers whose Salaries are provided by the Dominion Grant.

(*A*) *Officials whose salaries are paid wholly from the Agricultural Instruction Grant:—*

Instructor in Dairying and Dairy Farming, S. G. Carlyle, Department of Agriculture, Edmonton.
Editor of Publications, Jas. McCaig.
Stenographer.

(*B*) *Officials whose salaries are paid in part from the Agricultural Instruction Grant:—*

Vermilion School—
Principal, F. S. Grisdale.
Stenographer.
Instructor in Science.
Plotman, Robt. Pilkie.
Instructor in Domestic Science.
Assistant Instructor in Domestic Science, A. M. Lavalee.
Laborer.

Olds School—
Principal, W. J. Elliott.
Agricultural Mechanics, G. R. Holeton.
Instructor in Science, Jas. G. Taggart.
Agronomist, H. Saville.
English Instructor, J. J. Loughlin.
Instructor, Household Science, Miss Elizabeth Cumming.
Assistant Instructor, Household Science, Miss Marion E. Storey.
Stenographer.

Claresholm School—
Principal, W. J. Stephen.
Instructor in English and Elementary Science, J. C. Hooper.
" Animal Husbandry.
" Domestic Science, Myrtle A. Hayward.
" Assistant Instructor, Domestic Science, Grace Robertson.
Stenographer.
Teamster.

Women's Institutes—
Superintendent, Miss Mary McIsaacs, Department of Agriculture, Edmonton.
Stenographer.
Assistant Superintendent, Mrs. Jean Muldrew.
Demonstrator, Miss Bessie McDermand.
Instructress in Nursing, Miss Annie McKenzie.
" Miss L. Bessie Sargent.

District Agents—
H. H. McIntyre, Stony Plain.
H. W. Scott, Claresholm.
W. Geo. Payne, Vermilion.

ALBERTA

Grant of 1916–17.

Summary Statement, April 1, 1916, to March 31, 1917.

No.	Classification.	Balances April 1, 1916.	Grant.	Total Credits.	Expenditure.	Dr. Balance.	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	Schools of Agriculture—						
	(*a*) Maintenance	6,429 63	34,000 00	40,429 63	30,164 12		10,265 51
	(*b*) Equipment	326 27	1,200 00	1,526 27	2,653 86	1,127 59	
2	Provincial Instructors—Dairying—	152 56	3,500 00	3,652 56	3,040 69		611 87
3	Instruction and Demonstration—						
	(*a*) Demonstration Farms..Dr.	2,406 52	6,500 00	4,093 48	3,484 86		608 62
	(*b*) Demonstration Trains	42 88	5,000 00	5,042 88	5,233 63	190 75	
	(*c*) Dairying	2,119 19	2,000 00	4,119 19	2,212 16		1,907 03
	(*d*) District Agents		4,000 00	4,000 00	4,293 59	293 59	
4	Women's Work	27 61	3,000 00	3,027 61	2,209 75		817 86
5	Bulletins and Publications	1,024 01	2,500 00	3,524 01	2,121 00		1,403 01
6	Miscellaneous	806 63	47 22	853 85			853 85
	Interest accrued	642 85		642 85			
	Interest, 1916–17			555 05			1,197 90
		9,165 11	61,747 22	71,467 38	55,413 66	1,611 93	17,665 65

1.—SCHOOLS OF AGRICULTURE.

(*a*) Maintenance.

	$ cts.
Salaries and wages	13,423 34
Travelling expenses	1,196 30
Maintenance and Supplies	13,956 26
Printing and advertising	1,548 22
Incidentals	40 00
	$30,164 12

(*b*) Equipment.

	$ cts.
Apparatus, appliances, implements, etc	2,273 47
Books and magazines for Libraries	380 39
	2,653 86

2.—INSTRUCTION IN DAIRYING.

S. G. Carlyle, salary	$	3,000 00
Printing		40 69
		3,040 69

3. INSTRUCTION AND DEMONSTRATION.

(a) Demonstration Farms.

Purchase of Breeding Stock and Incidental Expenses	$	6,120 05
Refund—Sale of animals		2,644 19
	$	3,484 86

The above includes the purchase price of the Holstein bull " King Pontiac Segis Alcarta 11th," No. 26692, and of 10 head of pure-bred Hereford cattle.

(b) Demonstration Train.

Wages	$	70 13
Travelling		560 88
Supplies and Maintenance		3,702 70
Printing and Advertising		832 42
Incidentals		67 50
	$	5,233 63

(c) Dairy Competitions.

Travelling	$	297 00
Supplies and Maintenance		1,307 16
Premiums—Live Stock		587 00
Printing and Advertising		21 00
	$	2,212 16

(d) District Agents.

Travelling	$	1,287 31
Supplies and Maintenance		2,423 44
Prizes, Schools of Agriculture Competitions		274 50
Printing and Advertising		308 34
	$	4,293 59

4. WOMEN'S WORK.

Salaries—Miss Mary McIsaacs, Superintendent, and Staff	$	1,000 00
Travelling		678 43
Printing, Advertising and Stationery		520 82
Incidentals		10 50
	$	2,209 75

5. BULLETINS AND PUBLICATIONS.

Salaries—Jas. McCaig, Editor of Publications, and Staff	$	2,059 67
Supplies and Printing		61 33
	$	2,121 00

SESSIONAL PAPER No. 15c

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the years 1913, 1914, 1915, and Appropriations for 1916 and 1917.

Service.	1913.	1914.	1915.	1916 Appropriations.	1917 Appropriations.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Civil Government	30,329 36	36,911 29	48,329 94	49,520 00	54,940 00
Live Stock—					
Live Stock and Agricultural Institutes and Associations: Fat Stock Shows; Destruction of Wolves; Stock Inspection; Brands and Brand Book; Grants to Live Stock Associations; Spring Stock Show	44,789 38	60,981 07	47,736 83	46,100 00	52,700 00
Fairs and Exhibitions—					
Official Judges, Production of Pure Seed Grain, and Seed Fair, Fairs Association, etc.	95,826 51	107,365 49	117,226 18	121,500 00	112,500 00
Poultry—					
To encourage Poultry Industry; Grant to Poultry Association	8,972 65	8,547 83	8,300 37	8,200 00	8,700 00
Dairying—					
Advances to Creameries; to encourage dairy work	111,710 36	175,024 84	249,851 53	19,500 00	19,500 00
Demonstration Farms—					
Administration and Operation	73,620 58	66,840 44	70,231 95	65,000 00	65,500 00
Schools of Agriculture—					
Operation; Agricultural Instruction, Scholarships	3,605 95	1,375 40	20,503 11	20,500 00	20,000 00
Statistics, Protection of Game, Prairie Fires	34,270 19	48,373 26	45,371 79	32,500 00	36,000 00
Grants—					
United Farmers Irrigation Association, Women's Institutes, Destruction of Noxious Weeds, Natural History Society	30,591 45	31,708 08	27,640 66	30,000 00	35,000 00
Bacteriological and Pathological Work	7,705 80	9,000 00	9,000 00	.....	.....
Sundries and Contingencies	1,003 51	500 00	1,694 19	1,000 00	1,200 00
	442,425 68	546,627 70	645,786 55	393,820 00	406,040 00
Less Revenue	202,268 00	272,318 00	342,086 00	.....	.....
	240,157 68	274,309 70	303,700 55	.....	.....

BRITISH COLUMBIA

AGREEMENT OF 1916-1917.

1	Towards appointment of Inspectors, Instructors, Directors, Superintendents and District Representatives	$ 19,000 00
2	Farm demonstration and experimental work, field crop competitions, boys' and girls' clubs, crop and stock competitions, cow-testing associations, poultry demonstration stations, co-operative variety tests	16,000 00
3	Horticulture demonstration stations, experimental work in vegetable growing and greenhouse work, pathological and entomological investigation work, demonstration and experimental work in various cultural practices in fruits and vegetables	7,000 00
4	Agricultural Journal, bulletins, reports, circulars and miscellaneous printing	5,000 00
5	Department of Education, towards agricultural instruction in Public, Normal and High Schools	15,000 00
6	Contingencies and miscellaneous	1,732 50
	Total	$ 63,732 50

During the year the following lines of work were carried out under the Agricultural Instruction Grant:—

Poultry Breeding Stations.—A number of these stations have been established in the more remote sections. A flock consisting of 20 hens and 2 male birds, is supplied to each individual who is selected to carry on the work. In addition to experimental or demonstration work, the operator is required to sell at least 15 settings of eggs at not more than $1 per setting. At the end of the year the flock becomes the property of the man in charge. This work has proved very valuable in supplying suitable foundation stock in new districts.

Egg-laying Competition.—Forty pens of poultry, consisting of six birds each, are included in this competition. Not only are records kept of the number and weight of eggs produced by each pen, but, in addition, valuable information has been secured regarding the cost of production and the relative value of various foods.

Silos.—The building of the first silo in a district is supervised and silo-filling demonstrations conducted. Two small silo-filling outfits have been used. The results have exceeded the most optimistic expectations. There are now 500 silos in the Province, as compared with ten when the work started.

Boys' and Girls' Clubs.—Boys' and Girls' Clubs have been organized in various parts of the province. Under the auspices of these clubs, competitions are conducted in poultry raising, potato growing, grain growing, pig raising, and calf raising.

Seed Fairs.—Two Provincial Seed Fairs, one at Armstrong and the other at New Westminster, were conducted, while assistance was given to a number of local Seed Fairs. These Fairs are for the purpose of encouraging the planting of better seed, and to stimulate the home production of such seed.

Clover Huller.—To carry out the policy of encouraging the production of better seed, a clover huller was purchased and operated by the Department for educational purposes.

Drainage.—For the purpose of giving instruction in regard to the value of drainage, two ditching machines have been purchased and operated on experimental and demonstration work.

Field Crop Competitions.—Under the auspices of the Farmers' Institutes a number of competitions in the growing of staple field crops were conducted. In this work, however, most of the prize-money was provided from Provincial funds.

Cow Testing Associations.—A small amount of money was used to give assistance to various cow-testing associations, which now are four in number.

Demonstration Stations.—Demonstration stations, varying in size from one to twenty acres, are located at Armstrong, Chilliwack, Rosehill, Edgewood, Grand Forks, Rock Creek, Courtenay, Errington, Pitt Meadows, Fort George, Aldermere, and North Nechaco. A number of these plots are used as seed production centres, in addition to demonstrating methods of cultivation and the growing of crops. The three plots located along the line of the Grand Trunk Pacific are proving very valuable in crop and variety tests.

Coast Markets Commissioner.—Office and travelling expenses in connection with the Coast Markets Commissioner's work, together with salary of Mr. R. C. Abbott, Commissioner, and his stenographer, were paid from the grant. This office is very largely devoted to the study of coast marketing conditions for British Columbia products, especially fruit, vegetable and poultry products. A weekly report is issued from the period June to December. There is an extensive correspondence with British Columbia producers in connection with the finding of markets for their products. Information is given on marketing conditions; and reports are made on the quality of the products.

In addition to these duties, Mr. Abbott has been Inspector in charge of Potato Exports and, in this connection, has inspected and issued certificates on potato shipments of the Province. In conjunction with the inspection work, he carried on actively a campaign to develop outside markets for potatoes and has done a very great deal to raise the standard of commercial shipments. Total expenditures for this work amounted, roughly, to $2,700.

District Horticulturist in Grand Forks.—The salary and expenses of Mr. E. C. Hunt, representing the Horticultural Branch in the Boundary district, with headquarters at Grand Forks, were paid from the grant, and totalled $1,706.03. The duties of this officer are very largely those of a district representative, except that he has official powers as an Inspector for the control of plant diseases and insect pests. Mr. Hunt has been largely engaged in the supervision of the control of Fire Blight; has conducted numerous Pruning Schools; has done a good deal of judging of horticultural exhibits at fairs; lecture work at Farmers' Institutes; has judged numerous crop competitions, and conducted general educational work for the advancement of fruit and vegetable growing.

Assistant Horticulturist, Prince Rupert.—The salary and expenses of Mr. A. R. Neal, Acting Assistant Horticulturist, Prince Rupert, were paid, totalling $2,908.63. Mr. Neal's duties include the supervision of the Experimental Plots at Terrace, Lawn Hill and Bella Coola, lecturing at farmers' meetings, and farm-to-farm instruction visits. His work relates more particularly to field crops than to fruits and vegetables.

Pathological Laboratory, Vernon—

The work of this Laboratory has been continued, it being devoted to investigation and advisory work on plant diseases and pests for the interior districts. Mr. M. H. Ruhmann's salary and expenses, totalling $1,400, have been paid from the grant. A great deal of Mr. Ruhmann's work and time is devoted to Codling Moth investigation work, in co-operation with the local staff of the Dominion Entomologist.

Terrace Experimental Plot—

The 5-acre Experimental Plot at Terrace, in the Similkameen district, has been continued for the year at an expense of, approximately, $1,300. The variety tests of various cereals, fodder crops, vegetables and fruits, have been

continued. An extensive report has been submitted. The plot has done a great deal to demonstrate the relative merits of the different crops and the varieties of each for that district.

Lawn Hill Experimental Plot—

The Experimental Plot at Lawn Hill, on the Queen Charlotte Islands, has been carried on during the year at a total cost of $735. The work is very similar to that at Terrace and is intended to serve the Queen Charlotte Islands. There are especial problems in this district in connection with muskeg lands, and the annual report on the Plot shows what is being done on a typical soil of the Islands.

Bella Coola Experimental Plot—

The Experimental Plot at Bella Coola has been operated during the year at a total expense of about $861. This plot is very similar to the Terrace Plot in its general methods. There is evidence that this plot has done a good deal to influence the agriculture of the district.

Summerland Small-Fruit and Vegetable Experiment Station—

This Station at Summerland, with Mr. J. L. Hilborn in charge, has been continued, the cost for the year being $1,000. An extensive report submitted to the Department showed in detail the results secured with the various tender vegetables and small fruits to which this station is devoted. As a result of this plot there has been a considerable development in fruit and vegetable growing in the district.

Various Experimental Plots—

A certain portion of the Telkwa Experimental Plot, operated under the direction of the Live Stock Branch, was planted out to fruit trees, the value of which for this district required testing. Similarly, on the Plot at Prince George, an experimental area was set aside for fruit trees of types likely to do well in the district.

Hatzic Strawberry Plot—

The work being carried on consists of testing varieties of strawberries on a commercial basis. Shipping tests were continued and valuable information was gained.

Agricultural Journal—

This journal is the official organ of the Department of Agriculture, and is educational in its object. The material is supplied by members of the Department's staff, officials of the Provincial University, Dominion officials and by prominent farmers. No advertising is carried on and the cost is provided by the grant.

Agricultural Education in British Columbia.

During 1916, two additional District Supervisors of School Agriculture were appointed, making three in all. The new appointees were J. E. Britton, B.S.A. for Upper Okanagan, and E. L. Small, B.S.A. for the lower Fraser. The Supervisors' duties include instruction in Agriculture in the high schools and in the high school extension classes, together with supervision of rural science work in the public schools tributary to high schools where Agriculture is being

taught. Regular visits are made to the public schools, and the supervision thus given is leading to much better work in nature study and school gardening. Regular high school agricultural classes were conducted at the high schools at Chilliwack, Vernon, Armstrong, Murrayville and Cloverdale. The number of students was 120 in 1916. Great interest was shown in the work and encouraging progress was made.

Four high school extension classes were held in three districts during the winter months. Owing to the fact that the majority of the young men from these districts are on active service, the classes were thrown open to men generally. The average attendance was 36. The Supervisors provide their own motor cars, but receive a monthly allowance from the school board.

During the year, school gardening was carried on systematically in 145 schools and home gardening in 25 schools. The movement towards the improvement of school grounds, inaugurated two years ago, has made considerable progress, sixty school grounds have already been included under the scheme.

For reasons connected with the province's finances, the Summer School for Teachers, held in 1914 and 1915, was omitted in 1916.

Early in the year a general appeal was made to teachers and pupils of public and high schools to join in the Food Production campaign. The Director of Elementary Agricultural Education, Mr. J. W. Gibson, reports that the response was excellent and demonstrated the ability and enterprise as well as the unfailing loyalty of the boys and girls of the province. "To have done ever so little in this practical way to help the nation in the supreme hour of her trial will stand to the credit of all young Canadians in future years, and will remain to them and to their children's children a thing of blessed memory."

Officers Provided by the Grant.

(*A*) *Officers, regularly employed, whose salaries are paid wholly from the Agricultural Instruction grant.*

J. W. Gibson, M.A., Director Elementary Agricultural Education, Victoria.
J. C. Readey, B.S.A., District Supervisor Agricultural Education, Chilliwack.
E. L. Small, B.S.A., District Supervisor Agricultural Instruction, Cloverdale.
J. E. Britton, B.S.A., District Supervisor Agricultural Instruction, Armstrong.
Abbott, R. C., Coast Markets Commissioner, Vancouver.
Brookland, E., Caretaker, Dry Farming Station, Quilchena.
Elliott, W., 105 Mile Dry Farming Station, 105 Mile, B.C.
Fahrni, W., Mechanical Expert, Victoria.
Ferris, J., Silo Operator, Victoria.
Hay, Geo. C., B.S.A., District Agriculturist, Telkwa.
Hunt, E. C., Assistant Horticulturist, Grand Forks.
Lawson, F. M., Stenographer, for Coast Markets Commissioner, Vancouver.
McLennan, Roy, Editor, Publications Branch, Victoria.
Philips, E. L., Stenographer for Acct., Dept. of Agriculture, Victoria.
Ruhman, M. H., Asst. Plant Pathologist, Vernon.
Stroyan, W. H., Caretaker, Egglaying contest, Victoria.

(*B*) *Officers, regularly employed, whose salaries are paid partly from the Agricultural Instruction grant.*

Bekker, B., Caretaker, Errington Demonstration Plot, Errington.
Clarke, N., Cow-tester, Chilliwack.
Mansell, R. K., Cow-tester, Cloverdale.
Thornberry, G. H., Cow-tester, Courtenay.
Tucker, F. W., Cow-tester, New Westminster.

BRITISH COLUMBIA.

GRANT OF 1916-17.

SUMMARY STATEMENT, April 1, 1916, to March 31, 1917.

No.	Classification.	Balances April 1.	Grant.	Refunds.	Total Credits	Expenditure.	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	Instructors, Inspectors, Directors, Superintendents and District Representatives	2,024 28	19,000 00	976 75	22,001 03	20,164 04	1,836 99
2	Farm demonstration and experimental work, field crop competitions, boys' and girls' clubs, crop and stock competitions, cow-testing associations, poultry stations and variety tests	3,786 23	16,000 00	.....	19,786 23	12,461 69	7,324 54
3	Horticultural Demonstration Stations, Experimental work in vegetable growing and greenhouse work, pathological and entomological investigation, etc	1,934 36	7,000 00	.....	8,934 36	3,950 61	4,983 75
4	Agricultural Journal, bulletins, etc	1,880 81	5,000 00	.....	6,880 81	2,429 51	4,451 30
5	Department of Education, towards Agricultural Instruction in Public, High and Normal Schools	.....	15,000 00	.....	15,000 00	15,000 00	.....
6	Contingencies and Miscellaneous	0 42	1,732 50	.....	1,732 92	808 09	924 83
		9,626 10	63,732 50	976 75	74,335 35	54,813 94	19,521 41

BRITISH COLUMBIA.

1. INSTRUCTORS AND INSPECTORS.

	$ cts.	$ cts.
Balance April 1, 1917	2,024 28	
Grant, 1916-17	19,000 00	
Refund for cattle	976 75	
Expended March 31, 1917		20,164 04
Balance forward		1,836 99
	22,001 03	22,001 03
Salaries and Expenses—		
E. C. Hunt, Assistant Horticulturist		1,699 78
R. C. Abbott, Coast Markets Commissioner		2,750 29
M. H. Ruhmann, Assistant Plant Pathologist		1,378 19
A. R. Neale, Assistant Horticulturist		2,505 89
J. H. McCulloch, District Agriculturist		2,504 05
W. E. Hogan, Soils and Crops		2,411 70
G. C. Hay, District Agriculturist		2,104 31
W. H. Stroyan, Caretaker, egg-laying contest		825 00
R. J. Ferris, Silo Operator		1,234 91
B. Bekker		360 00
H. C. Bunt		474 65
W. Gibson		164 45
Sundry persons		399 92
Incidentals		30 90
Cow-testers		1,320 00
		20,164 04

2. DEMONSTRATIONS AND EXPERIMENTAL PLOTS.

	$ cts.	$ cts.
Balance April 1, 1916	3,786 23	
Grant, 1916-17	16,000 00	
Expended Mar. 31, 1917		12,461 69
Balance forward		7,324 54
	19,786 23	19,786 23
Demonstration Plots		1,614 38
Demonstration Farm, rental	150 00	
Demonstration Farm, labour, etc	604 74	
		754 74
Wages, (pay sheets), October and November		274 52
Wages—miscellaneous service		275 90
2 pure bred heifers		218 44
Drainage, materials, etc		392 55
Silo Demonstrations		654 32
Poultry for stations		1,172 55
Egg-laying contest		1,100 23
Prizes for Egg-laying contest		370 00
Poultry Building repairs		39 90
Milk testing		285 63
Seed grain purchase		837 89
Incidentals		350 32
Freight, threshing machine		75 75
Equipment—		
Clover huller	1,738 55	
Grain separator	141 75	
Grader and ditcher	329 40	
Seed cleaner	17 62	
Miscellaneous equipment	15 00	
		2,242 32
Cost of Production bonuses		195 00
Crop competition Prizes		1,450 00
Seed Fairs—		
Prizes	462 00	
Grants (two)	100 00	
Expenses	114 17	
		676 17

Salaries and Expenses.	$ cts.
S. F. Dunlop	160 51
B. Bekker	85 28
J. H. McCullock, District Agriculturist	25 50
W. Gibson	359 05
R. H. Martin	1,010 37
S. Milne	300 00
H. C. Brant	18 65
J. E. Millington	42 00
G. C. Hay, District Agriculturist	300 67
W. Elliott	285 00
E. Brookland	285 00
	15,852 74

Refund Account.

	$ cts.	
Eggs, Boys' and Girls' Clubs	331 32	
Eggs sold	991 20	
	1,322 52	
Sale of Crops from plots	314 98	
Sale of Seed grain	175 45	
Field competitions	1,500 00	
Miscellaneous	78 00	
		3,390 95
Net expenditure		12,461 69

3. DEMONSTRATIONS IN HORTICULTURE.

	$ cts.	$ cts.
Balance, April 1, 1917	1,934 36	
Grant, 1916–17	7,000 00	
Expenditure, Mar. 31, 1917		3,950 61
Balance forward		4,983 75
	8,934 36	8,934 36
Salaries and wages	2,786 61	
Travelling expenses	306 74	
		3,093 35
Materials, supplies, rentals		578 60
Equipment		180 21
Trees for Experimental plots		125 23
		3,977 39
Less sale of produce		26 78
		3,950 61

4. PRINTING AND PREPARING BULLETINS.

	$ cts.	$ cts.
Balance, April 1, 1917	1,880 81	
Grant, 1916–17	5,000 00	
Expended, Mar. 31, 1917		2,429 51
Balance forward		4,451 30
	6,880 81	6,880 81
Salaries and wages		1,001 66
Supplies, materials, etc		14 48
Printing		1,742 83
		2,758 97
Less subscriptions to Agricultural Journal		329 46
		2,429 51

SESSIONAL PAPER No. 15c

6. MISCELLANEOUS.

	$ cts.	$ cts.
Balance, April 1, 1917	0 42	
Grant 1916–17	1,732 50	
Expenditure, Mar. 31, 1917		808 09
Balance forward		924 83
	1,732 92	1,732 92
Salaries and wages		217 58
Travelling expenses		222 10
Prizes, Boys' and Girls' Poultry, Pig and Potato Competitions		253 00
Grant, Farmers' Institutes		25 50
Supplies and materials		115 70
		833 88
Refund, seed grain		25 79
		808 09

Department of Education.

	$ cts.
Agricultural Instruction in High Schools, with district supervision at five centres	5,163 13
Grants to Public-school teachers of Rural Science	3,408 00
Salary, travelling and office expenses of Director of Elementary Agricultural Education	4,319 84
Special school courses in fruit packing	869 18
Expenditures for seeds, etc. in connection with home gardens	239 85
Grants towards expenditures made by School Boards in operating school gardens	1,000 00
	15,000 00

Comparative Statement of Expenditure of Provincial Funds for Agricultural Purposes for the Years 1913, 1914 and 1915 and Appropriations for 1916 and 1917.

Service.	1913 to March 31.	1914 to March 31.	1915 to March 31.	1916 to March 31.	1916–17 to March 31 (Estimated).	1917–18 to March 31 (Estimated).
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Salaries—Agricultural Branch, Dept. of Finance and Agriculture	37,851 78	53,755 12	67,288 62	62,919 70	73,496 00	65,752 00
Agricultural associations	88,823 65	67,311 11	41,041 45	16,709 33	30,000 00	20,000 00
Board of Horticulture	2,556 65	1,078 25	217 70	318 85	500 00	500 00
Grants of various associations	4,633 42	2,717 68	1,278 04	.....	2,500 00	
" "	250 00	250 00	250 00	1,757 85	250 00	5,750 00
" "	3,062 51	2,999 55	2,096 46	2,564 78	2,500 00	
Department of Agriculture	30,160 87	19,340 31	.....	.....	.....	.....
Grants to students; Compensation for Cattle; Services and expenses, outside; Miscellaneous, weed suppression	.....	24,985 50	104,021 88	77,336 31	67,000 00	58,000 00
Panama Exposition	.....	.....	.....	7,322 92	.....	.....
Fruit Work—						
Fruit cooling and storage	871 01	2,992 51				
Fruit exhibitions	43,110 28	36,059 28				
Fruit packing schools	4,567 49	4,043 15	68,335 25	36,649 76	43,750 00	33,500 00
Inspection nursery stock	11,681 58	41,216 74				
Fruit growers' associations	4,211 42	6,251 66				
Demonstration orchards	18,071 23	2,242 13	.....	.....	.....	.....
Farmers' institutes and importation of pure bred stock in 1913	58,577 05	17,575 75	5,704 60	18,108 45	20,000 00	15,000 00
Women's institutes	4,640 01	.....	4,993 85	.....	7,500 00	7,500 00
Poultry Association Grant	2,934 64	3,870 86	1,879 91	5,213 60	2,500 00	.....
Poultry shows	3,100 00	4,000 00	4,000 00	.....	.....	.....
Dry farming experimental plots	.....	.....	.....	.....	.....	2,000 00
Totals	318,103 59	290,789 60	303,107 26	233,898 34	249,996 00	208,002 00

NOVA SCOTIA.

AGREEMENT 1916-17.

	$ cts.	$ cts.
1. Agricultural College and Agricultural Schools:—		
(a) Capital expenditure to pay interest and sinking fund for cost of construction of and furnishing for Science Building	7,500 00	
(b) Salaries and maintenance	23,000 00	
		30,500 00
2. Instructors, Directors, Superintendents and District representatives—salaries and expenses		7,500 00
3. Instruction and Demonstration:—		
Dairying	3,500 00	
Poultry	1,600 00	
Beekeeping	800 00	
Soils (including drainage and field crops)	3,000 00	
Horticultural and entomological instruction and investigation	8,000 00	
Fruit growing	1,000 00	
Short courses	3,000 00	20,900 00
4. Women's work (Women's Institutes, Homemakers' Clubs, Domestic Science, etc.)		3,000 00
5. Bulletins, reports, circulars and miscellaneous printing		800 00
6. Instruction in Public and High Schools and in Normal Schools in Agriculture. Nature Study, Training of Teachers and School Gardens		11,000 00
7. Contingencies and miscellaneous		1,159 28
Total		74,859 28

District Representatives.

In six out of eighteen counties, District Representatives have been employed for part or all of the year, and to some extent the work has been carried into a few other counties. The Demonstration work performed by them included the operation of the clover huller purchased in 1915. This machine threshed 14,000 lb. of clover during 1916. Two years previous, no clover seed was being produced in the province. Four grain separators were purchased and sent to parts of the province where farmers did not own separators and had not access to them. These machines enabled the District Representatives to complete the instruction given in seed selection. In the Cape Breton counties a further effort was made to encourage the growing of turnips on account of the importance of the crop in relation to the feeding of live stock in that section. Other forms of work included demonstrations with improved seed—potato, oat, wheat and turnip—demonstrations with fertilizers, lime and marl, and demonstrations in the use of spraying machinery and in the dipping of sheep.

Poultry Husbandry.

Poultry meetings were held in many parts of the province. A successful demonstration was given in the preservation of eggs in silicate of soda on a large scale to encourage groups of farmers to co-operate in such an undertaking. The policy inaugurated three years ago of helping farmers to erect and conduct improved poultry houses was continued and two additional houses were built. A poultry convention was held at Truro, and a model poultry plant demonstrated at Sydney Exhibition. Some 400 settings of eggs were distributed to school children in connection with school fair work.

Bee-keeping.

A provincial Apiarist was appointed to give instruction and promote the industry generally. Part of his time is devoted to Entomological work.

Soil Survey and Drainage.

An assistant in soil physics was appointed in connection with the general soil survey now being made. Already valuable information has been secured which will form the basis for future recommendations as to methods of soil cultivation and fertilization. All the men connected with the work having enlisted, practically no drainage work was carried out.

Entomological Work.

Two orchards badly infected with the "green apple bug," a newly discovered insect pest, were taken over for demonstration. Hundreds of farmers inspected the work. Similar work was done with the "apple maggot." Bulletins were issued relating to these insects.

Short Courses.

All the expenses of the Short Courses held at Bridgewater, Lawrencetown, Yarmouth and Musquodoboit were paid by the grant. A short course was provided at the Agricultural College for farmers living in the outlying counties and each person attending was allowed $10.00 to assist in meeting expenses.

Women's Institutes.

Five Institutes were organized during the year, bringing the total up to 49. A two weeks' Short Course for women was held at the Agricultural College, and a one week's course at Lawrencetown. An annual convention is also held at the College. An attractive exhibit in which every phase of the work was presented, including "old time" industries, was made at the provincial exhibition.

School Agriculture.

As a result of the gardening propaganda, home gardening in particular has been very much extended. It is planned to use the school children in a campaign for greater production and to increase the quantity of seed distributed. One hundred and ninety-five teachers attended the Rural Science School, Truro.

Officers receiving Remuneration from the Federal Grant.

(*a*) *Persons, regularly employed, whose salaries are paid wholly from the Agricultural Instruction Grant.*

County Representative, H. McPherson, Antigonish County.
" " H. S. Cunninham, Cape Breton Counties.
" " H. B. Langille, Cape Breton and Richmond County.
" " T. C. Munn, Inverness County.
" " A. B. MacDonald, Guysboro County.
" " Father J. E. Robitaille, Isle Madam, Richmond Co.
Entomological Field Work Superintendent, H. G. Payne, Department of Agriculture, Truro.
Assistant Provincial Entomologist, C. A. Good, Truro (now Captain in Expeditionary Force and not on salary).
Soil Analyst, J. G. Archibald, Department of Agriculture, Truro.
Women's Institute Superintendent, Miss Jennie A. Fraser, New Glasgow.
Director Rural Science Education, L. A. DeWolfe, Truro.
Dean Rural Science School, C. L. Moore, Halifax.
Fruit and Vegetable Growing Instructor, W. N. Byers, Truro.
" " " F. B. Kinsman, Truro.

(*b*) *Persons receiving part salary from Federal grant.*

Dairy Superintendent, W. A. MacKay, Department of Agriculture, Truro.
Stenographer to Dairy Superintendent, Truro.
Accountant, C. R. B. Bryan, Truro.
Professor of Agriculture, J. M. Trueman, Agricultural College, Truro.
Professor of Horticulture, P. J. Shaw, Agricultural College, Truro.
" Zoology, W. H. Brittain,Agricultural College, Truro.
" Botany, H. W. Smith, Agricultural College, Truro.
" Chemistry, L. C. Harlow, Agricultural College, Truro.
" " J. M. Scott, Normal College, Truro.
" Physics, J. A. Benoit, Normal College, Truro.
" Manual Training, F. G. Mathews, Normal College, Truro.
Principal Truro Academy, E. C. Allen.
(The above nine persons give special instruction at the Summer Rural Science school).
Entomological Inspector, J, P. Spittal, Department of Agriculture, Truro.
" " W. W. Whitehead, Department of Agriculture, Truro
" " L. G. Saunders, Truro.
" " C. F. U. Whitman, Department of Agriculture, Truro.
" " W. Delong, Truro, Department of Agriculture.

NOVA SCOTIA.

Grant of 1916–17.

Summary Statement, April 1, 1916, to March 31, 1917.

No.	Classification.	Grant.	Balances, April 1, 1916.	Total Credits.	Expenditure.	Credit Balance.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1	Agricultural Colleges and Schools, $30,500.00—					
	(a) Capital expenditure	7,500 00	3,673 01	11,173 01	8,678 74	2,494 27
	(b) Salaries and maintenance	23,000 00	.....	23,000 00	22,868 93	131 07
2	Instructors, Directors, etc	7,500 00	20 12	7,520 12	6,653 61	866 51
3	Instruction and Demonstration, $20,900.00—					
	(a) Dairying	3,500 00	0 59	3,500 59	3,040 10	460 49
	(b) Poultry	1,600 00	66 50	1,666 50	1,262 13	404 37
	(c) Bee-keeping	800 00	26 87	826 87	777 49	49 38
	(d) Soils (drainage and field crops)	3,000 00	6 70	3,006 70	2,428 67	578 03
	(e) Horticultural and Entomological Investigation	8,000 00	.....	8,000 00	7,998 66	1 34
	(f) Fruit-growing	1,000 00	225 75	1,225 75	1,225 57	0 18
	(g) Short courses	3,000 00	56 04	3,056 04	2,795 49	260 55
4	Women's work	3,000 00	1,350 41	4,350 41	3,513 36	837 05
5	Bulletins and miscellaneous printing	800 00	0 28	800 28	800 28	.....
6	Agricultural Instruction in School	11,000 00	972 41	11,972 41	9,634 42	2,337 99
7	Contingencies and miscellaneous	1,159 28	8 72	1,168 00	965 53	202 47
		74,859 28	6,407 40	81,266 68	72,642 98	8,623 60

1. AGRICULTURAL COLLEGES AND SCHOOLS.

(a) Interest and Sinking Fund, Science Building.

	$ cts.	$ cts.
Grant, 1916–17	7,500 00	
Balance, April 1, 1916	3,673 01	
Expended, Mar. 31, 1917		8,678 74
Balance forward		2,494 27
	11,173 01	11,173 01
Eastern Trust Company, interest	6,680 26	
Payment on loan	1,998 48	
	$8,678 74	

(b) Salaries and Maintenance.

Grant, 1916–17	$23,000 00	
Expended, Mar. 31, 1917		$22,868 93
Balance forward		131 07
	$23,000 00	$23,000 00

The Agricultural College expenditure is not presented in detail. The grant was expended for additional men and services at the college. The public accounts of the province show that $23,000.00 more was expended on the college and farm for 1915–16 than for 1912–13.

2. DISTRICT REPRESENTATIVES.

	$ cts.	$ cts.
Grant, 1916-17	7,500 00	
Balance, April, 1916	20 12	
Expended, March 31, 1917		6,653 61
Balance forward		866 51
	7,520 12	7,520 12

Salaries and Expenses.	Salary.	Expense.
H. S. Cunninham, Cape Breton	450 00	531 97
H. B. Langille, Assistant, Cape Breton	471 15	642 85
T. C. Munn, Assistant, Cape Breton	225 00	372 80
H. McPherson, Antigonish	1,083 33	217 90
A. B. McDonald, Guysboro	326 92	704 31
Rev. J. E. Robitaille, Richmond	230 00	353 10
	2,786 40	2,822 93
		2,786 40
		5,609 33

Equipment.

Grain separators, spraying machines, bicycle, etc	207 15
Supplies and repairs	752 34
Incidentals	38 39
Prizes	46 40
	$6,653 61

3. INSTRUCTION AND DEMONSTRATION.

(a) Dairying.

	$ cts.	$ cts.
Grant, 1916-17	3,500 00	
Balance, April 1, 1916	0 59	
Expended, Mar. 31, 1917		3,040 10
Balance forward		460 49
	3,500 59	3,500 59

W. A. McKay, salary (one-half)	666 66
" expenses	841 27
Assistants, services and expenses	1,097 27
Advertising and printing	49 75
Supplies and incidentals	176 45
Expenses, delegates Dairy Convention	58 70
Dairy competition, awards	150 00
	$3,040 10

Assistants were engaged in extending co-operative dairying, either addressing a series of meetings or attending dairy conventions.

4. WOMEN'S INSTITUTES.

	$ cts.	$ cts.
Grant, 1916-17	3,000 00	
Balance, April 1, 1916	1,350 41	
Expended		3,513 36
Balance		837 05
	$4,350 41	$4,350 41

Miss Jennie A. Fraser, salary $683.35, expenses $367.86	1,051 20
Assistants and lecturers, services and expenses	1,313 38
Printing and advertising	339 80
Supplies and incidentals	69 51
Equipment	104 47
Badge pins (to be refunded)	270 00
Grants (45)	245 00
Instructors' board	120 00
	$3,513 36

5.—BULLETINS AND PRINTING.

	$ cts.	$ cts.
Grant, 1916–17	800 00	
Balance, April 1, 1916	0 28	
Expended, March 31, 1917		800 28
	800 28	800 28
Fruit Growers Association reports		300 00
Entomological Society Reports		372 95
Dairy Bulletin		20 00
Leaflets		49 75
Incidentals		57 58
		800 28

6.—RURAL SCIENCE SCHOOLS.

	$ cts.	$ cts.
Grant, 1916–17	11,000 00	
Balance, April 1, 1916	972 41	
Expended, March 31, 1917		9,634 42
Balance forward		2,337 99
	11,972 41	11,972 41
L. A. DeWolfe, Director Rural Science—		
Salary	2,166 69	
Expenses	329 83	
		2,496 52
C. L. Moore, Principal Rural Science School, salary		1,000 00
Dora M. Baker, stenographer, salary		405 00
Eight instructors		820 00
		4,721 52
Schools for seed plants, eggs and exhibition prizes		605 03
Equipment		318 41
Books and Stationery		257 27
Printing		80 85
Teacher grants		2,237 50
Students' bonuses		710 00
Students' travelling expenses		461 80
Miscellaneous		242 04
		9,634 42

(*b*) Poultry.

Grant, 1916–17	1,600 00	
Balance, April 1, 1916	66 50	
Expended, March 31, 1917		1,262 13
Balance forward		404 37
	1,666 50	1,666 50
J. P. Landry, Superintendent, expenses		657 18
Material demonstration house, equipment		281 60
Eggs supplied to schools		190 83
Supplies and incidentals		84 09
Poultry Convention expenses		48 43
		1,262 13

(*c*) Bee-Keeping.

Grant, 1916–17	800 00	
Balance, April 1, 1916	26 87	
Expended, March 31, 1917		777 49
Balance forward		49 38
	826 87	826 87
C. B. Gooderham: salary, $529.88; expenses, $202.84		732 72
Equipment		34 27
Printing and advertising		10 50
		777 49

(*d*) Soil, Drainage, Field Crops.

	$ cts.	$ cts.
Grant, 1916–17	3,000 00	
Balance, April 1, 1916	6 70	
Expended, Mareh 31, 1917		2,428 67
Balance forward		578 03
	3,006 70	3,006 70
L. C. Harlow, ehemist, serviees, $100; expenses, $96.54		196 54
J. G. Archibald, assistant: salary, $833.30; expenses, $6.50		839 80
Sundry persons, serviees and expenses		502 51
		1,538 85
Equipment		52 50
Supplies and incidentals		737 32
Halifax Agricultural Society, Ragwort Campaign		100 00
		2,428 67

Demonstrations in the use of ground limestone have been conducted in various parts of the province. Chemists devoted their time to soil survey work. The item for services and expenses includes judges of Field Crop Competitions.

(*e*) Horticultural and Entomological Investigation.

	$ ets.	$ ets.
Grant, 1916–17	8,000 00	
Expended, Mareh 31, 1917		7,998 66
Balance forward		1 34
	8,000 00	8,000 00
W. H. Brittain, entomologist, expenses		564 14
C. A. Good, assistant: salary, $365; expenses, $31.45		396 45
C. B. Gooderham, assistant, salary		166 66
H. G. Payne, chief inspector: salary, $1,166.62; expenses, $592.70		1,759 32
Salaries and expenses, eleven inspectors		4,068 37
		6,954 94
Rent of Field Laboratories in fruit counties		60 00
Equipment, motor-eyele		338 60
Supplies for spraying demonstrations and incidentals		645 12
		7,998 66

(*f*) Fruit Growing.

	$ cts.	$ cts.
Grant, 1916–17	1,000 00	
Balances, April 1, 1916	225 75	
Expended, March 31, 1917		1,225 57
Balance forward		0 18
	1,225 75	1,225 75
Salary and Expenses—		
P. J. Shaw, expense		47 44
F. B. Kinsman: expenses, $321.48; salary, $208.35		529 83
Wm. Byers, expenses, $270.22; salary, $165.38		435 60
		1,012 87
Supplies and incidentals		212 70
		1,225 57

(*g*) Short Courses.

	$ ets.	$ ets.
Grant, 1916–17	3,000 00	
Balance, April, 1916	56 04	
Expended, March 31, 1917		2,795 49
Balance forward		260 55
	3,056 04	3,056 04

(g) Short Courses—*Concluded.*	$ cts.
J. A. Sinclair, V.S.: services, $200; expenses, $34.45	234 45
L. H. Trueman: services, $65; expenses, $92.02	157 02
Printing and advertising	59 75
Supplies and incidentals	165 27
Delegates expenses	539 00
	1,155 49
Demonstration Buildings—	
Grant Bridgewater Building	800 00
Repairs Antigonish Building	240 00
Grant Lawrencetown Building	600 00
	2,795 49

7.—Contingencies.

	$ cts.	$ cts.
Grant, 1916–17	1,159 28	
Balance, April 1, 1916	8 72	
Expended, March 31, 1917		965 53
Balance forward		202 47
	1,168 00	1,168 00
W. M. Blair, services		240 00
C. R. B. Bryan, services as accountant		300 00
Postage		80 00
Picton County Survey		100 00
Electro-types		234 43
Incidentals		11 10
		965 53

Comparative Statement of Expenditure of Provincial Funds for Agricultural purposes for the Years 1913, 1914, 1915, 1916, and estimated for 1917.

Service.	1913 to Sept. 30.	1914 to Sept. 30.	1915 to Sept. 30.	1916 to Sept. 30.	1917 to Sept. 30,—Appropriations.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
General Agriculture—					
Department salaries and expenses	7,672 08	5,449 77	14,415 64	14,747 58	
Assistance in dairying	926 16	1,257 34	1,849 69	1,783 87	
Entomological inspection	3,582 27	2,744 15	2,938 06	3,910 31	
Drainage	1,534 01	903 19	400 93	12 39	
Exhibitions	12,457 84	18,222 13	10,484 08	5,540 17	
Field crop competitions	870 18	939 18	936 07	1,022 71	
Live stock improvement	898 57				
Meetings	621 84	69 77	406 50	89 40	36,000 00
Model orchards	983 31	832 15	596 45	500 01	
Printing and advertising	134 35	306 81	212 60	490 92	
Miscellaneous	397 06	228 20	448 45	616 58	
Fruit growers and county associations	1,032 75	1,150 00	1,200 00	1,450 00	
Stallion enrolment	84 75	518 91	142 23	240 95	
Assistance to poultry	100 35	565 13	423 20	632 65	
Advertising fruit in Great Britain				781 95	
Agricultural college	19,607 25	22,000 00	18,300 00	19,000 00	19,000 00
College farm	14,317 41	14,000 00	14,700 00	15,000 00	15,000 00
Agricultural societies	13,282 32	15,787 05	14,710 76	14,490 00	15,000 00
Total	78,502 50	84,973 78	82,164 66	84,309 95	85,000 00
Revenue	9,498 41	6,677 26	10,018 82	9,539 75	1,000 00
	69,004 09	78,296 52	72,145 84	74,770 20	84,000 00

NEW BRUNSWICK

AGREEMENT—1916-17.

	$ cts.	$ cts.
1. Agricultural Schools—		
(a) Capital expenditure	17,000 00	
(b) Salaries and maintenance	4,000 00	21,000 00
2. Instructors, directors, superintendents and district representatives—salaries and expenses		13,500 00
3. Instruction and Demonstration—		
(a) Bee-keeping	500 00	
(b) Soils and drainage	4,000 00	
(c) Horticulture	1,500 00	
(d) Short courses	1,500 00	7,500 00
4. Women's work		3,500 00
5. Bulletins, reports, circulars and miscellaneous printing		500 00
6. Instruction in Public, High and Normal Schools in Agriculture, Nature Study and Domestic Science, Training of Teachers and School Gardens		12,000 00
7. Contingencies and miscellaneous		1,209 60
Total		59,209 60

Demonstration Work.

Practical demonstrations were carried on during the year in soil drainage, cultivation, and crop production, limestone pulverizing, the home-mixing of commercial fertilizers and the operation of a clover huller. The traction ditcher operated chiefly in the counties of Carleton and Kings, digging 1,626 rods of ditch. The limestone pulverizer operated in Charlotte and Carleton counties. Instruction in the mixing and application of fertilizers was given at a number of agricultural society gatherings, and also formed a part of the short course programme at Sussex, Woodstock, and Bathurst. The clover huller, purchased and operated, did much towards demonstrating the value to farmers of red clover and the production of seed. In addition to the short courses already mentioned, a four-day general course was given at the Dairy School at Ste. Hilaire. Standing crop competitions were conducted in ten counties. Seven seed fairs were held, including Provincial Seed Exhibition at Fredericton and six county fairs.

Horticulture.

The work of the Horticultural Division includes the supervision of demonstration orchards, instruction in pruning, spraying, etc., and the holding of short courses. As in previous years, the examining of orchards and orchard sites and the giving of instruction to operators in orchard management constituted a large portion of the work.

A course in apple-packing, lasting for four days, was held in February at Fredericton. Fifty students attended. Lectures were given on insect and fungous enemies and their control, and many growers were convinced of the necessity for using power spraying outfits.

Women's Institutes.

At the present time there are 92 Women's Institutes in the province. During the winter months two ten-day courses in home economics were held at each of the Agricultural Schools. One hundred and fifty-six registered for the four courses.

Twenty-two institutes made creditable displays of canned and preserved fruits and vegetables at the New Brunswick Apple Exhibition held in St. John. This year a tour will be made of the province, giving demonstrations in canning and lectures on food economics. An institute convention is held annually. The entire outlay for Women's Institute work, including an annual grant of five dollars to each institute qualifying, is met by the grant.

Elementary Agriculture.

The Director of Elementary Agricultural Education reports an increase of over one thousand in the number of pupils receiving instruction in elementary agriculture during the year. The number of home plots was nearly doubled, being 727 as against 378 in the year previous. Other home project work was also undertaken, chiefly in connection with poultry, a subject that lends itself to general adoption by pupils of both sexes. The number of eggs distributed was large. Twelve school fairs were held in the autumn of 1916, with encouraging results.

Summer schools of rural science for teachers were again held at Sussex and Woodstock, with an enrolment of 81 at the former place and 42 at the latter. A teachers' winter course was held in January at the same points, with an attendance of 63 at Woodstock and 58 at Sussex.

The publication of the "Rural Education Monthly" was begun by the Division in June, to be a medium of communication between teachers and the department, and to educate public opinion as to the importance of the school in the satisfactory solution of rural problems.

Officers Provided by Dominion Grant.

Horticulturist, A. G. Turney, B.S.A., Fredericton.
Dairy Superintendent, C. W. McDougall, Sussex.
Poultry Superintendent, Seth Jones, Sussex.
Entomologist, William McIntosh, St. John.
Director Elementary Agricultural Education, R. P. Steeves, M.A., Sussex.
Assistant Director Elementary Agricultural Education, F. A. Dixon, Sussex
Superintendent Agricultural Societies, M.A. McLeod.
Livestock Instructor, Thomas Hetherington, B.S.A.
Instructor in Soils and Crops, O. C. Hicks, B.S.A.
Instructor in Drainage, John Woods.
Assistant in Livestock, William Kerr.
Supervisor of Women's Institutes, Hazel E. Winter, Fredericton.
Instructor in Household Science, Ada B. Saunders, Fredericton.
District Representative, A. C. Belliveau, Richibucto, (Kent County).
District Representative, E. M. Taylor, Gagetown, (Sunbury and Queens Counties).

NEW BRUNSWICK.

Grant of 1916–17.

Summary Statement, April 1, 1916 to March 31, 1917.

	Balances April 1, 1916.	Grant.	Total Credits.	Expenditure.	Cr. Balance.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
1. Agricultural Schools—					
(a) Capital		17,000 00	21,000 00	18,635 51	2,364 49
(b) Salaries and maintenance		4,000 00			
2. Instructors, directors, etc	1,347 66	13,500 00	14,847 66	14,847 66	
3. Instruction and Demonstration—					
$ cts.					
(a) Bee-keeping 500 00					
(b) Soils and drainage 4,000 00					
(c) Horticulture 1,500 00					
(d) Short courses 1,500 00		7,500 00	7,500 00	7,500 00	
4. Women's institutes	593 86	3,500 00	4,093 86	3,810 91	282 95
5. Bulletins and printing	159 32	500 00	659 32	659 32	
6. Agricultural instruction in schools	1,154 26	12,000 00	13,154 26	11,406 06	1,748 20
7. Contingencies and miscellaneous	1,218 68	1,209 60	2,428 28	2,002 40	425 88
	4,473 78	59,209 60	63,683 38	58,861 86	4,821 52

1. AGRICULTURAL SCHOOLS.

	$ cts.	$ cts.
Grant, 1916–17—		
Capital	17,000 00	
Salaries and maintenance	4,000 00	
Balance April 1, 1916		15,234 79
Expended to Mar. 31, 1917:		
Capital		971 62
Salaries and maintenance		2,429 10
Balance forward		2,364 49
	21,000 00	21,000 00
Capital—		
Equipment		124 92
Pasteurizer		807 50
Buildings account		39 20
		971 62
Salaries and maintenance—		
Salaries, janitors, Sussex and Woodstock		1,000 00
Insurance, Woodstock		435 00
Maintenance and supplies, Sussex and Woodstock		994 10
		2,429 10

2. INSTRUCTORS, DIRECTORS, Etc.

	$ cts.	$ cts.
Grant, 1916–17	13,500 00	
Balance, April 1, 1916	1,347 66	
Expended, March 31, 1917		14,847 66
	14,847 66	14,847 66

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2. INSTRUCTORS' DIRECTORS, ETC.—*Concluded.*

	Salaries. $ cts.	Expenses. $ cts.
A. G. Turney, Horticulturist	1,800 00	408 41
C. W. McDougall, Dairy Superintendent	1,500 00	626 41
N. W. Eveleigh	1,400 00	602 70
Seth Jones, Poultry Supt.	1,200 00	375 66
H. B. Durost, Fertilizers and Bee-keeping	1,241 66	558 50
J. E. DeGrace, Supt. Agricultural Societies	1,120 84	773 19
Wm. McIntosh, Entomologist	600 00	92 20
O. C. Hicks, Instructor, Soils and crops	699 16	426 55
J. W. Mitchell, Supt. Live Stock and Dairying	1,166 66	476 62
R. P. Gorham, Assist. Horticulturist		21 45
Incidentals		11 22
	10,728 32	4,372 91
Total		15,101 23
Less amount transferred to (5) Bulletins and Printing		253 57
		14,847 66

3. INSTRUCTION AND DEMONSTRATION.

	$ cts.	$ cts.
Grant 1916-17	7,500 00	
Balance April 1, 1916		629 69
Expended, March 31, 1917		6,870 31
	7,500 00	7,500 00

(*a*) BEE-KEEPING.

Supplies and Incidentals		31 11

(*b*) SOILS AND DRAINAGE.

Equipment			
Clover Huller and Power			1,350 00
Services and Expenses:	$ cts.		
D. H. Cronkhite, foreman, limestone pulverizer	898 38		
J. Woods foreman ditcher	559 21		
W. B. Dickinson, foreman huller	106 21		
Engineers (two)	524 41		
Jas. Brenner, surveyor	150 50		
		2,238 71	
Supplies, repairs, transport and incidentals		1,994 54	
		5,583 25	
Less Refunds		1,157 81	
			4,425 44

(*c*) HORTICULTURE.

4 demonstrators, services and expenses	1,949 32	
Students railway fares to apple-packing school	62 25	
		2,011 57

(*d*) SHORT COURSE WORK.

Services and expenses sundry persons	243 95	
Advertising, printing, postage	617 06	
Supplies and incidentals	156 55	
		1,017 56
Total		7,485 68
Less amount transferred to (5) Bulletins and Printing	337 75	
Less amount transferred to (7) Miscellaneous	277 62	
		615 37
		6,870 31

4. WOMEN'S INSTITUTES.

	$ cts.	$ cts.
Grant, 1916–17	3,500 00	
Balance April 1, 1916	593 86	
Expended, Mar. 31, 1917		3,810 91
Carried forward		282 95
	4,093 86	4,093 86
Supervisor and Assistant Lecturers, etc., salaries and expenses		2,256 46
Printing and advertising, hand books, programmes, etc		329 68
Books and periodicals		196 53
Supplies and incidentals		422 23
Short Course and Convention prizes		95 00
Railway fares, allowance for		93 60
Grants to 74 Institutes		380 00
W. I. Pins		96 60
		3,870 10
Refunds		59 19
		3,810 91

5. BULLETIN AND PRINTING.

	$ cts.	$ cts.
Grant, 1916–17	500 00	
Balance, April 1, 1916	159 32	
Expended, March 31, 1917		659 32
	659 32	659 32
Lime Bulletin		56 00
Fertilizer leaflet		12 00
		68 00
To transfer from (2) Instructors, Directors, etc		253 57
To transfer from (3) Instructions and Demonstration		337 75
		659 32

6. INSTRUCTION IN PUBLIC, HIGH AND NORMAL SCHOOLS, ETC.

	$ cts.	$ cts.
Grant, 1916–17	12,000 00	
Balance, April 1, 1916	1,154 26	
Expended, March 31, 1917		11,406 06
Balance forward		1,748 20
	13,154 26	13,154 26
Salaries and Expenses—		
R. P. Steeves, Director	2,399 03	
A. M. McDermot, Assistant	531 30	
Victor B. Robinson, Assistant	1,115 93	
Instructors and others	1,287 65	
		5,333 91
Railway fares and bonuses to teachers, Short Course and Rural Science School	1,060 20	
Grants for school gardens	4,279 18	
Prizes, school fairs	52 90	
Equipment	86 80	
Printing Rural Monthly, etc	115 97	
Supplies and incidentals	638 79	
		11,567 75
Less refunds		161 69
		11,406 06

7. MISCELLANEOUS.

	$ cts.	$ cts.
Grant, 1916-17	1,209 60	
Balance, April 1, 1916	1,218 68	
Expended, Mar. 31, 1917	.....	2,002 40
Balance forward	.....	425 88
	2,428 28	2,428 28
Salaries, Stenographers	899 50	
Equipment	428 19	
Refunded railway fares to Agricultural Students	337 65	
Incidentals	59 44	
		1,724 78
To amount transferred from (3) Instruction and Demonstration		277 62
		2,002 40

COMPARATIVE STATEMENT of Expenditure of Provincial Funds for Agricultural Purposes for the Years 1913, 1914, 1915 and 1916 and Appropriations for 1917.

Service.	1913 to October 31.	1914 to October 31.	1915 to October 31.	1916 to October 31.	1917 to October 31 Appropriations.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Salaries and Expenses, Department	6,499 68	7,019 06	7,945 44	9,914 76	9,558 00
Agricultural Societies	16,867 66	17,444 83	17,000 00	17,000 00	18,000 00
Dairying	4,092 28	3,039 53	6,477 85	5,830 96	7,200 00
Live Stock Industries	950 45	3,611 78			
Dairy School	537 03	4,067 99	.....	.....	.....
Farmers' Institute	1,048 96	.....	738 05	285 42	600 00
Horticulture	4,155 67	1,999 37	1,997 26	1,499 32	2,500 00
Cold Storage	750 00	.....	.....	.....	.....
Poultry Raising	1,984 94	980 08	1,245 57	1,417 52	2,000 00
Crop Competitions, Seed Fairs	1,809 44	2,082 77	3,398 16	4,878 71	4,400 00
Miscellaneous	309 59	355 00	1,944 11	1,389 81	2,125 00
Brown Tail Moth, etc	999 51	4,481 93	3,754 45	3,370 79	2,912 00
Bonus Mud Dredges	.....	1,000 00	519 90	.....	500 00
Bonus Clover Hullers	.....	.....	600 00	.....	.....
Limestone crusher and power	.....	.....	1,895 00	275 40	500 00
Bonus to Wheat Mills	.....	.....	.....	2,500 00	3,000 00
Total	40,005 21	46,082 34	47,515 79	48,362 69	53,295 00

PRINCE EDWARD ISLAND

AGREEMENT, 1916-17.

	$ cts.
1. Capital Account	500 00
2. Director of Agricultural Instruction and Instructors—Salaries and expenses	10,300 00
3. Instruction and Demonstration (including Short Courses)—Live Stock, Poultry, Beekeeping, Horticulture, Fruit-growing and Soils	3,000 00
4. Women's Work (Women's Institutes)	3,200 00
5. Agricultural Instruction in Public and High Schools	12,000 00
6. Office assistance	1,200 00
7. Miscellaneous and contingencies	243 75
Total	30,443 75

Dairying.

Early in the year steps were taken to bring about an improvement in the dairy industry. A provincial conference of butter and cheese makers was held. The recommendation of this conference for the appointment of an instructor to work among factories was acceded to. A graduate of the Guelph Dairy School was also employed to instruct patrons in the handling and care of milk. Following the recommendation of the conference, a Dairy School was provided at Truro College, Nova Scotia, by the co-operation of the departments of agriculture of the three Maritime Provinces. A number of makers from the island availed themselves of the courses.

To promote the introduction of oats, peas and vetches as a substitute ensilage crop for corn, a demonstration field of six acres was grown, and the crop ensiled and fed with satisfactory results.

Drainage.

Open-ditch work was undertaken in one section to serve as a model for other districts contemplating such work. Drainage surveys were made for upwards of twenty farmers throughout the province. The manufacture of tile is now being conducted on the island as a result of the efforts of those in charge of drainage demonstrations.

Wool and Lamb Marketing.

In co-operation with the Dominion Department of Agriculture, two grading centres for wool were established, and a second co-operative wool sale was held. Thirteen organizations of farmers sold their lambs by tender.

Continuing the plan adopted in 1915, a second carload of pure bred rams was purchased and resold to the farmers at cost. An increase of 12¼ lbs. in the average weight of lambs has resulted from the first purchase.

Short Courses.

During the winter months, a series of short courses similar to those of last year was conducted. The courses were of one week's duration, and were held at points not visited previously. Eighty-one meetings were held at nine points, with an average attendance of 66.

Women's Institutes.

There are at present 43 Women's Institutes in the province. Further organization work has been suspended on account of the war. The usual series of lectures and demonstrations in Home Economics was held. The short course in Household Science at Charlottetown was attended by 126 women and girls from the rural sections.

School Agriculture.

The equipment of the Rural Science department at Prince of Wales College has now been completed, and teachers are given a course of special training to enable them to teach elementary agriculture. The number in attendance was 272.

At the time of holding the Summer School, a Rural Life Conference was conducted, lasting two days. The attendance varied from 200 to 450.

Four school fairs were held during 1916, and plans are being made for the extension of the work over a wider field. A survey was made by school children to ascertain the number of sheep kept on the island. Much interest was stimulated among the children and valuable training resulted.

Officers Provided by the Dominion Grant.

Director of Agricultural Instruction, W. J. Reid, B.S.A.
District Representative, Queens County, W. R. Shaw, B.S.A.
" " Prince County, Leslie Tennant, B.S.A.
Director of Rural Science Department, Prince of Wales College, J. E. McLarty, B.S.A.
Director of Agricultural Instruction in Public Schools, Wm. Cain.
" " " Walter Curtis.
" " " D. S. Fraser,
" " " L. A. Adams.
Accountant, Miss A. W. Newbery.
2 Stenographers.

PRINCE EDWARD ISLAND.

Grant of 1916–17.

Summary Statement, April 1, 1916, to March 31, 1917.

No.	Classification.	Balance April 1, 1916.	Grant.	Expenditure.	Cr. Balance.
		$ cts.	$ cts.	$ cts.	$ cts.
1	Capital account	.....	500 00	470 30	29 70
2	Instructors, directors, superintendents and representatives	.....	10,300 00	10,300 00	.....
3	Instruction and demonstration	258 07	3,000 00	3,258 07	.....
4	Women's Institutes	89 47	3,200 00	3,289 17	0 30
5	Elementary Agricultural Instruction in Public and High Schools	3 01	12,000 00	12,003 01	.....
6	Office assistance	17 63	1,200 00	1,217 63	.....
7	Contingencies	.....	243 75	242 88	0 87
		368 18	30,443 75	30,781 06	30 87

1.—CAPITAL ACCOUNT.

	$ cts.	$ cts.
Grant, 1916-17	500 00	
Expended to March 31, 1917		470 30
Balance forward		29 70
	500 00	500 00

Fencing—labour and materials	172 01
Furnishing and equipment	79 40
Ditcher and grader	103 82
Shearing machine	11 57
Miscellaneous expense	103 50
	470 30

The materials, labour, furnishings and equipment charged were incurred in connection with the new office at Montague. The fencing was erected at Prince of Wales College in connection with the Rural Science department.

2.—INSTRUCTORS, DIRECTORS AND DISTRICT REPRESENTATIVES.

	$ cts.
Grant, 1916-17	10,300 00
Salaries and Expenses—	
J. L. Tennant	1,865 46
W. J. Reid	2,091 54
W. R. Reek	2,595 84
Theo. Ross	125 00
M. H. Coughlin	1,376 70
Walter Shaw	1,279 59
F. T. Morrow	83 34
J. E. McLarty	250 00
Miscellaneous travelling	359 05
Supplies and incidentals	273 48
	10,300 00

3.—INSTRUCTION AND DEMONSTRATION.

	$ cts.	$ cts.
Grant, 1916-17	3,000 00	
Balance forward, April 1, 1916	258 07	
Expenses to March 31, 1917		3,258 07
	3,258 07	3,258 07

Services and Expenses—		
J. T. Morrow	1,162 31	
J. M. Hughes	501 00	
R. B. Hooper	44 90	
J. R. McLean	50 00	
P. C. Gauthier	25 00	
B. Gallant, dairy instructor	77 75	
A. McRae	12 00	
W. R. Reek, travelling	146 44	
Sundry travelling	367 25	
Supplies and incidentals	361 20	
Printing and advertising	60 37	
Rural Conference expenses	77 55	
Investigation expense	98 00	
Rent, Summerside office	180 00	
Insurance on buildings	94 30	
		3,258 07

4.—WOMEN'S INSTITUTES.

	$ cts.	$ cts.
Grant, 1916–17	3,200 00	
Balance, April 1, 1916	89 47	
Expended to March 31, 1917		3,289 17
Balance carried forward		0 30
	3,289 47	3,289 47

Salaries	1,825 00
Travelling expenses	387 49
Supplies and incidentals	347 75
Convention and Short Course expenses	553 55
Printing and advertising	126 75
Institute grants	170 00
	3,410 54
Less refunds	121 37
	3,289 17

5.—AGRICULTURAL INSTRUCTION IN SCHOOLS.

	$ cts.	$ cts.
Grant, 1916–17	12,000 00	
Balance, April 1, 1916	3 01	
Expended to Mar. 31, 1917		12,003 01
	12,003 01	12,003 01

Salaries and Expenses—

S. B. McCready	1,198 05	
D. S. Fraser, inspector	996 56	
W. Curtis, inspector	1,025 96	
Leslie Adams, inspector	992 51	
Wm. Cain, inspector	1,014 96	
J. E. McLarty, inspector	763 78	
A. T. Houston, inspector	175 00	
Sundry persons, travelling	67 90	
		6,234 72
Printing and advertising	250 25	
Equipment and Library	108 50	
Supplies and incidentals	421 61	
Rural Conference—Speakers' expenses	231 60	
Grants to teachers for teaching agriculture	2,609 83	
Summer School of Science—Teachers' bonuses and travelling	1,596 50	
Instructors' salaries	550 00	
		12,003 01

6.—OFFICE ASSISTANCE.

	$ cts.	$ cts.
Grant, 1916–17	1,200 00	
Balance, April 1, 1916	17 63	
Expended to Mar. 31, 1917		1,217 63
	1,217 63	1,217 63

Salaries—

Adele W. Newbery	560 00
Bessie Alward	300 00
Florence Murdock	250 00
Adele Gordon	50 00
A. McFarlane	50 00
Postage	7 63
	1,217 63

7. CONTINGENCIES.

	$ cts.	$ cts.
Grant, 1916–17...	243 75	
Expended to Mar. 31, 1917		242 88
Balance forward		0 87
	243 75	243 75
Sundry travelling expenses	55 79	
Office expenses, supplies, and incidentals	193 27	
		249 06
Less—refunds		6 18
		$242 88

Comparative Statement of Expenditure of Provincial Funds for Agriculture.

	1913 to Dec. 31.	1914 to Dec. 31.	1915 to Dec. 31.	1916 to Dec. 31.	1917 Appropriations.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
Farmers' Institutes	1,834 50	1,988 35	1,653 00	2,077 50	2,070 00
Field Crops, Horticulture, Dairying, and Poultry	987 86	1,148 19	939 27	2,562 28	3,000 00
Exhibitions, Association grants, and live stock judging	7,948 90	9,822 21	10,558 30	8,865 50	8,780 00
Miscellaneous, Dept. expenses	3,450 38	4,806 72	10,785 76	2,772 73	5,850 00
Totals	14,221 64	17,765 47	23,936 83	16,278 01	19,700 00

VETERINARY COLLEGES.

The grant to Veterinary Colleges for the year 1916–17, was divided as follows, based on the number of students enrolled in the previous year who were British subjects:—

	Students, 1915-16.	Grants, 1916-17.
Ontario Veterinary College	145	$14,285 72
School of Veterinary Science, Montreal	58	5,714 28

Ontario Veterinary College.

In December 1916, the grant of 1914–15, amounting to $15,607.85, was paid to the Ontario Veterinary College. The financial statement follows, from November 1, 1916 to March 31, 1917:—

Balance on hand, October 31, 1916			$ 20 45
Grant			15,607 85
			$ 15,628 30
Contingencies—Postage, Stationery, temporary assistance, etc.		$357 18	
Equipment—Library supplies, laboratory supplies, etc.		450 40	
Printing and advertising		291 36	
Services of lecturers, demonstrators, etc.—			
J. N. Pringle	$257 10		
H. G. Wilson	128 52		
S. A. Cudmore	107 10		
J. E. Keyes	300 00		
		$792 72	
			1,891 66
Balance on hand			$13,736 64

Statement of Enrolment, 1916–17.

	First Year.	Second Year.	Third Year.
Ontario	15	21	20
Quebec	2	3	2
Nova Scotia	1	3	1
New Brunswick	0	1	0
P. E. Island	0	1	0
Manitoba	6	3	4
Saskatchewan	6	7	2
Alberta	1	2	1
British Columbia	1	0	0
South Africa	1	0	0
United States	8	6	15
Newfoundland	0	1	0
	41	48	45

British Subjects	105
Foreign Countries	29
Grand total of all students	134

School of Comparative Medicine and Veterinary Science.

The grant to the school of Veterinary Science, Montreal, for the year 1916–17 amounted, based on the enrolment of 58 students, to the sum of $5,714.28.

The following disbursements were charged to the grant:—

(1) Practical laboratory work and meat inspection	$	664 28
(2) Applied on salaries account		5,065 00
	$	5,729 28

The financial statement of the institution for the year ended June 30, 1917, was as follows:—

Receipts.

	$ cts.
Cash in bank, July 1, 1916	654 49
Students' fees	2,302 50
Provincial grant	3,500 00
Federal grant, "Agricultural Instruction Act"	5,729 28
Rental of Hospital	666 60
From Laval University	10,000 00
Diplomas	780 50
Sundry revenue	268 70
	$23,902 07

Disbursements.

Salaries of Professors	6,240 00
Salaries of Officers	2,178 00
Administration expense	456 22
Laboratory expense	664 10
Rental of hospital	1,002 28
Repayment of bank loan	1,000 00
To Laval University on land and building account	6,000 00
Light, heat, insurance	4,000 00
Sundry items	1,251 03
	22,791 63
Balance on hand	1,110 44
	$23,902 07

Statement of Enrolment, 1916-17.

First year, number of students	18
Second year, " "	22
Third year, " "	22
Total	62

APPENDIX TO THE REPORT OF THE MINISTER OF AGRICULTURE

REPORT

OF THE

DOMINION EXPERIMENTAL FARMS

FOR THE

FISCAL YEAR ENDING MARCH 31, 1917

PRINTED BY ORDER OF PARLIAMENT.

OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

[No. 16.—1918.]

Ottawa, March 31, 1917.

Sir,—I have the honour to submit herewith, for your approval, the thirtieth annual report of the work carried on at the Dominion Experimental Farms, Stations, and Sub-stations.

The accompanying report is radically different in form and scope from those of previous years. It is intended to furnish a concise but readable account of the year's operations throughout the Farms system; the data of the experimental work in any line to be published, in finished form, when such experiment is complete.

The objects in view in making this change are to further economy and efficiency. The departmental mailing lists have reached such proportions as to make the cost, labour, and time involved in the printing and distribution of a three-volume report prohibitive; moreover, the great amount of experimental work now being carried on, much of it of a complex character, makes it very difficult, if not impossible, to give a yearly detailed report of progress in such a way that the average reader can follow it easily and benefit therefrom. By issuing our findings in bulletin form, these difficulties are in a large measure avoided. I have every reason to believe that this change of plan will receive the unqualified approval of our farmers.

I have the honour to be, sir,
Your obedient servant,

J. H. GRISDALE,
Director, Dominion Experimental Farms.

To the Honourable
The Minister of Agriculture,
Ottawa.

DOMINION EXPERIMENTAL FARMS.

J. H. GRISDALE, B. Agr., Director.

PERSONNEL.

Central Experimental Farm, Ottawa, Ont.—

Dominion Chemist.. .. F. T. Shutt, M.A., D.Sc.
Assistant Dominion Field Husbandman.. .. W. L. Graham, B.S.A.
Dominion Animal Husbandman.. .. E. S. Archibald, B.A., B.S.A.
Dominion Horticulturist.. .. W. T. Macoun.
Dominion Cerealist.. .. C. E. Saunders, Ph.D.
Division of Botany.. .. H. T. Güssow.
Apiarist.. .. F. W. L. Sladen.
Dominion Agrostologist.. .. M. O. Malte, Ph.D.
Dominion Poultry Husbandman.. .. F. C. Elford.
Chief Officer, Tobacco Division.. .. F. Charlan.
Chief Officer, Division of Economic Fibre Production. .. G. G. Bramhill.
Supervisor, Division of Illustration Stations.. .. .. J. Fixter.
Officer in Charge, Division of Extension and Publicity.. W. A. Lang.

Branch Farms and Stations—

Superintendent, Experimental Station, Charlottetown, P.E.I.. .. J. A. Clark, B.S.A.
Superintendent, Experimental Station, Kentville, N.S. .. W. S. Blair.
Superintendent, Experimental Farm, Nappan, N.S. .. .. W. W. Baird.
Superintendent, Experimental Station, Fredericton, N.B.. W. W. Hubbard.
Superintendent, Experimental Station, Ste. Anne de la Pocatière, Que.. .. J. Begin.
Superintendent, Experimental Station, Cap Rouge, Que.. G. Langelier.
Superintendent, Experimental Station, Lennoxville, Que.. J. A. McClary.
Foreman-Manager, Experimental Station, Spirit Lake, Que.. .. P. Fortier.
Foreman-Manager, Experimental Station, Kapuskasing, Ont.. .. S. Ballantyne.
Foreman-Manager, Experimental Station, Morden, Man.. C. Boyle.
Superintendent, Experimental Farm, Brandon, Man.. .. W. C. McKillican, B.S.A.
Superintendent, Experimental Farm, Indian Head, Sask. W. H. Gibson, B.S.A.
Superintendent, Experimental Station, Rosthern, Sask. .. W. A. Munro, B.A., B.S.A.
Acting Superintendent, Experimental Station, Scott, Sask.. .. M. J. Tinline, B.S.A.
Superintendent, Experimental Station, Lethbridge, Alta.. W H. Fairfield, M.S.
Superintendent, Experimental Station, Lacombe, Alta. .. G. H. Hutton, B.S.A.
Superintendent, Experimental Station, Summerland, B.C. R. H. Helmer.
Superintendent, Experimental Station, Invermere, B.C.. G. E. Parham.
Officer in Charge, Experimental Farm, Agassiz, B.C.. .. W. H. Hicks, B.S.A.
Superintendent, Experimental Station, Sidney, B.C.. .. L. Stevenson, B.S.A., M.S.

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ANNUAL REPORT OF THE EXPERIMENTAL FARMS

FOR THE YEAR ENDING MARCH 31, 1917.

REPORT OF THE DIRECTOR

J. H. GRISDALE, B. Agr.

FIELD CROP AND LIVE STOCK NOTES FOR 1916.

While crop conditions in 1916 were, generally speaking, not so favourable as in the preceding year, the fact that 1915 was a record season for crop yields caused last year's returns to suffer unduly in comparison. The spring was a late one throughout the Dominion, and in the eastern provinces especially, excessive rainfall retarded seeding operations, while considerable low-lying land could not be sown at all.

This rainy period was followed by hot, dry weather in July and August, which, while favourable to heavy crops of well-cured hay, caused a premature ripening of cereals, and consequent reduced yields, especially in Ontario and Quebec.

In Manitoba and Saskatchewan, especially in the southern parts of those provinces, a serious outbreak of rust occurred in August, which destroyed the grain crops on large areas, and reduced the yield and grade still more widely.

In the Maritime Provinces and in British Columbia the season was a favourable one, and good crops of grains, hay, roots, and potatoes were harvested.

The total value of all field crops grown in Canada in 1916 is estimated at $808,054,000 as compared with $841,297,500, the revised total for 1915. The total for 1916, although lower than that for 1915, is greater than that for any other previous year.

In the following tables details are given of the yields and values of the principal field crops for the two years.

In table 3 the numbers of the various classes of live stock are given for the period 1912-16.

TABLE 1.—Comparison of Yields and Prices obtained for the Year 1915-16.

Crop.	Average Yield per acre.		Average Price per bush.		Total Production.	
	1915.	1916.	1915.	1916.	1915.	1916.
	bush.	bush.	$	$	bush.	bush.
Fall wheat	28·81	21·50	0·91	1·53	32,391,600	20,131,000
Spring wheat	29·10	16·75	0·82	1·29	394,355,000	200,236,000
All wheat	29.03	17·00	0·83	1·31	426,746,600	220,367,000
Oats	45·84	35·75	0·34	0·53	523,684,000	351,174,000
Barley	35·55	25·00	0·49	0·82	60,699,100	41,318,000
Rye	21·32	20·00	0·79	1·11	2,394,100	2,896,400
Peas	17·73	14·46	1·66	2·22	3,478,850	2,172,400
Beans	16·70	12·70	3·05	5·40	723,400	412,600
Buckwheat	22·88	17·50	0·75	1·07	7,865,900	5,976,000
Mixed grains	37·54	25·33	0·57	0·90	17,523,100	10,077,000
Flax	13·18	11·75	1·50	2·05	10,628,000	7,122,300
Corn for husking	56·72	36·31	0·71	1·07	14,368,000	6,282,000
Potatoes	130·81	136·20	0·57	0·81	62,604,000	61,128,000
Turnips, mangels, etc.	372·21	264·24	0·26	0·41	64,281,000	41,274,000
	tons	tons	per ton	per ton	tons	tons
Hay and clover	1·39	1·86	14·22	11·52	10,953,000	14,799,000
Fodder corn	10·00	6·65	4·96	4·92	3,429,870	1,976,700
Sugar beets	7·83	4·75	5·50	6·20	141,000	71,000
Alfalfa	2·83	2·91	12·98	10·70	261,470	261,450

TABLE 2.—Comparison of Eastern Canada, Prairie Provinces, and British Columbia as to Yields and Prices obtained.

	EASTERN PROVINCES.				PRAIRIE PROVINCES.				BRITISH COLUMBIA.			
	Average Yield per acre.		Average Price obtained.		Average Yield per acre.		Average Price obtained.		Average Yield per acre.		Average Price obtained.	
	1915	1916.	1915.	1916.	1915.	1916.	1915	1916	1915.	1916.	1915.	1916.
	bush.	bush.	$	$	bush.	bush.	$	$	bush.	bush.	$	$
Fall wheat	28·34	21·25	0·93	1·55	33·83	22·33	0·80	1·40	33·44	30·75	0·91	1·53
Spring wheat	20·83	16·23	1·10	1·65	29·11	16·76	0·82	1·28	32·43	31·00	0·96	1·54
Oats	36·15	25·89	0·44	0·68	53·23	41·12	0·28	0·48	61·84	60·50	0·49	0·64
Barley	32·87	22·56	0·60	1·01	36·71	25·79	0·45	0·77	40·36	45·75	0·64	0·83
Peas	17·63	14·23	1·65	2·23	21·44	26·08	1·53	2·24	29·75	33·75	1·24	1·67
Rye	19·55	17·15	0·82	1·19	27·41	23·19	0·73	1·04	.....	.....	.....	.....
Flax	12·32	9·46	1·77	2·75	13·18	11·77	1·50	2·04	.....	.....	.....	.....
Potatoes	122·01	124·73	0·62	0·89	147·69	174·31	0·44	0·59	247·28	189·00	0·45	0·70
Turnips, etc.	387·59	256·14	0·24	0·37	252·27	273·56	0·45	0·56	455·61	500·00	0·39	0·50
	tons	tons			tons	tons			tons	tons		
Hay and clover	1·35	1·83	14·60	11·53	1·78	1·88	8·83	7·79	2·34	2·67	14·57	17·75
Sugar beets	7·83	4·75	5·50	6·20	.....	.....	.....	.....	.....	.....	.....	.....
Fodder corn	10·41	6·68	4·90	4·92	3·51	6·16	7·49	4·89	12·62	10·00	4·00	7·00
Alfalfa	2·72	2·99	13·33	9·75	2·70	2·71	10·07	10·93	3·52	2·88	14·84	15·00

TABLE 3.—Farm Live Stock, 1912-16.

	1912.	1913.	1914.	1915	1916
Eastern Provinces—					
Horses	1,335,628	1,436,207	1,441,381	1,442,063	1,396,760
Milch cows	2,079,188	2,188,824	2,097,586	2,075,750	1,998,318
Other cattle	2,410,671	2,479,406	1,904,976	1,848,504	1,727,773
Sheep	1,750,994	1,747,108	1,630,714	1,569,488	1,483,065
Swine	2,638,410	2,491,564	2,357,128	2,269,029	2,096,832
Western Provinces—					
Horses	1,296,994	1,369,283	1,445,652	1,492,681	1,532,563
Milch cows	491,289	516,011	539,998	553,152	565,709
Other cattle	1,315,681	1,336,098	1,359,464	1,450,212	1,482,645
Sheep	290,685	336,423	382,331	422,770	435,767
Swine	806,635	922,221	1,038,102	804,328	679,011
British Columbia—					
Horses	59,735	60,518	60,705	61,355	61,312
Milch cows	34,011	35,599	35,702	37,944	39,318
Other cattle	101,021	100,183	99,091	100,439	103,101
Sheep	40,702	45,000	45,000	46,404	46,269
Swine	32,485	34,541	39,031	38,543	37,829

TABLE of Meteorological Observations taken at the Central Experimental Farm, Ottawa, from April 1, 1916, to March 31, 1917, giving maximum, minimum, and mean temperatures for each month, with date of occurrence; also the rainfall, snowfall, and total precipitation.

Month.	Maximum.	Minimum.	Range.	Mean.	Highest.	Date.	Lowest.	Date.	Rainfall.	Snowfall.	Total Precipitation.	Number of days Precipitation.	Heaviest in 24 hours.	Date.
	°	°	°	°	°		°		Ins.	Ins.	Ins.		Ins.	
April	51·97	34·54	17·43	43·25	73·4	30	18·0	3	1·65	10·50	2·70	14	0·77	7
May	63·19	44·83	18·35	54·00	81·8	24	33·0	3 & 10	6·89	S.	6·89	19	2·99	17
June	71·63	52·97	18·66	62·30	82·5	13	41·0	1	4·24	.....	4·24	17	0·89	16
July	86·49	62·96	23·53	74·72	100·3	30	52·0	9	1·50	.....	1·50	9	0·77	2
August	82·75	57·77	24·97	70·25	97·8	20 & 22	44·0	29	1·73	.....	1·73	13	0·45	8
September	68·52	49·15	19·37	58·83	83·0	13	36·0	26	3·15	.....	3·15	17	0·89	29
October	55·61	35·95	19·66	45·78	76·8	5	23·6	18	2·92	S.	2·92	14	0·62	17
November	37·97	24·28	13·68	31·12	62·4	8	− 2·0	26	1·46	3·25	1·78	13	0·45	1
December	23·45	9·81	13·63	16·62	46·0	6	−20·0	30	0·60	18·75	2·47	16	0·85	22
January	17·74	0·84	20·12	10·90	33·0	4	−20·2	12	0·11	39·50	4·05	18	0·77	14
February	16·76	−4·28	21·05	6·24	37·0	18	−25·2	3 & 12	T.	19·50	1·94	12	0·42	20
March	32·59	15·68	16·90	24·13	50·4	26	− 3·0	7	0·59	32·00	3·79	17	1·10	5
									24·84	126·50	37·18	179		

Rain or snow fell on 179 days during the 12 months.

Heaviest rainfall in 24 hours, 2·99 inches on May 17.

Heaviest snowfall in 24 hours, 11·00 inches on March 5.

The highest temperature during the 12 months was, 100·3° on July 30.

The lowest temperature during the 12 months was 25·2° on February 3 and 12.

During the growing season rain fell on 14 days in April, 19 days in May, 17 days in June, 9 days in July, 13 days in August, and 17 days in September.

July shows the lowest number of days with precipitation, viz., 9.

Total precipitation during the 12 months, 37·18 inches, as compared with 35·65 inches during 1915-16.

RAINFALL, Snowfall, and Total Precipitation from 1890 to 1916-17; also the average annual amount that has fallen.

Year.	Rainfall.	Snowfall.	Total Precipitation.
	In.	In.	In.
1890	24·73	64·85	31·22
1891	30·19	73·50	37·54
1892	23·78	105·00	34·28
1893	31·79	72·50	39·04
1894	23·05	71·50	30·20
1895	27·01	87·50	35·76
1896	21·53	99·75	31·50
1897	24·18	89·00	33·08
1898	24·75	112·25	35·97
1899	33·86	77·25	41·63
1900	29·48	108·00	40·72
1901	29·21	97·25	38·91
1902	25·94	101·75	36·10
1903	26·43	85·00	34·92
1904	25·95	108·75	36·79
1905	23·71	87·25	32·42
1906, January 1 to March 31	1·90	24·50	4·34
1906–07	21·73	72·50	28·94
1907–08	24·70	134·75	38·18
1908–09	22·13	107·90	32·91
1909–10	28·40	61·25	34·51
1910–11	18·94	88·25	27·72
1911–12	20·12	98·50	29·95
1912–13	32·54	106·50	43·18
1913–14	21·51	70·25	28·51
1914–15	16·77	78·50	24·67
1915–16	22·66	130·00	35·65
1916–17	24·84	126·50	37·18
Total for 27 years and 3 months	681·83	2,540·50	935·82
Average for 27 years	25·25	94·09	34·66

RECORD of Sunshine at the Central Experimental Farm, Ottawa, from April 1, 1916, to March 31, 1917.

Month.	Number of days with sunshine.	Number of days without sunshine.	Total hours sunshine.	Average sunshine per day.
April	23	7	176·0	5·86
May	24	7	209·7	6·76
June	27	3	194·2	6·47
July	30	1	312·7	10·08
August	29	2	275·6	8·89
September	26	4	159·2	5·30
October	28	3	166·2	5·36
November	23	7	111·1	3·70
December	20	11	86·0	2·77
January	18	13	76·8	2·47
February	22	6	133·7	4·77
March	28	3	173·8	5·60

CORRESPONDENCE.

The following tables show the numbers of letters received and sent by the Divisions at the Central Farm and the branch Farms and Stations. A marked increase over the totals of last year is shown, indicating a still further widening of interest in the work of the Farms.

The number of reports, bulletins, and circulars sent out represents only a very small fraction of the Experimental Farm publications mailed, as the main distribution of these is made by the Publication Branch of the Department.

CENTRAL EXPERIMENTAL FARM.

Division.	Letters received.	Letters sent.
Director	22,942	13,617
Field Husbandry	1,548	1,627
Chemistry	4,256	3,835
Horticulture	7,194	9,445
Cereals	21,005	4,926
Botany	3,934	4,064
Animal Husbandry	5,361	7,436
Agrostology	1,082	1,798
Poultry	5,339	7,219
Tobacco	4,038	3,105
French Correspondent	8,713	8,442
Apiary	1,526	1,457
Extension and Publicity	43,370	3,178
Illustration Stations	2,474	3,190
Miscellaneous	10,559	3,991
	143,341	77,330

BRANCH FARMS AND STATIONS.

	Letters received.	Letters sent.
Charlottetown	1,607	1,949
Nappan	2,042	2,128
Kentville	1,817	1,843
Fredericton	1,745	1,798
Ste. Anne	2,556	2,890
Cap Rouge	8,066	3,791
Lennoxville	2,062	1,922
Brandon	3,611	3,506
Morden	103	103
Indian Head	8,917	8,814
Rosthern	1,519	2,110
Scott	1,943	2,853
Lethbridge	5,267	5,973
Lacombe	4,234	3,614
Summerland	1,089	862
Invermere	737	758
Agassiz	3,812	3,220
Sidney	1,577	1,322
	47,704	49,456

Reports, Bulletins, and Circulars.

Reports and bulletins mailed	115,324
Circulars	110,223

The total number of letters received at all points in the Farm system will be seen to be 191,045, while 126,786 were sent out.

DISTRIBUTION OF SAMPLES.

The distribution of samples of seed grains and potatoes was again carried on during the past winter. From Ottawa, some 10,500 samples were sent out. The distribution from the branch Farms and Stations is confined to potatoes, of which the following numbers were mailed to applicants from the Farm or Station indicated: Charlottetown 11, Fredericton 315, Nappan 422, Kentville 360, Brandon 497, Indian Head 1,714, Rosthern 215, Scott, 233, Lethbridge 1,142, Lacombe 796, Agassiz, 407.

The total distribution from the Central and branch Farms was 16,639 samples.

Some special distributions were also made, such as tobacco from the Central Farm; trees, shrubs, and tree seeds from the prairie Farms; sweet corn, vegetable, and flower seeds from the Stations at Lennoxville and Cap Rouge, Que.; strawberry plants from Nappan, N.S., etc.

PUBLICATIONS ISSUED.

During the year the following publications have been sent to press:—

The Annual Report of the Experimental Farms for the year 1915-16.
Bulletins, Regular Series—
- No. 87, The Principles of Poultry House Construction, by F. C. Elford, Dominion Poultry Husbandman.
- No. 88, The Preparation of Poultry Produce for Market, by the same author.
- No. 89, Poultry Keeping in Town and Country, by the same author.

In the Second Series the following have been issued—
- No. 27, Soil Fertility, by Dr. F. T. Shutt, Dominion Chemist.
- No. 28, Flax for Fibre, by J. Adams, Assistant Dominion Botanist.
- No. 29, Cranberry Culture, by M. B. Davis, Assistant in Horticulture.
- No. 30, Feeding for Beef in Alberta, by W. H. Fairfield and G. H. Hutton.
- No. 31, Gopher Destruction, compiled by J. H. Grisdale.

Circulars—
- No. 12, The Black or Stem Rust of Wheat, by H. T. Güssow.
- No. 13, Garden Making on Vacant Lots, by W. T. Macoun, Dominion Horticulturist.

Pamphlets—
- No. 14, The Home Vegetable Garden, by W. T. Macoun, Dominion Horticulturist.

Special Circulars—
- No. 1, Grain Growing on the Prairies, by J. H. Grisdale, Director, Dominion Experimental Farms.
- No. 2, Maximum Crops, 1917, by W. L. Graham, Assistant Field Husbandman.
- No. 3, Varieties of Grain Recommended for Use in Canada, by Dr. C. E. Saunders, Dominion Cerealist.
- No. 4, Notes on the Cultivation of some Staple Vegetables, by W. S. Blair, Superintendent, Experimental Station, Kentville.
- No. 5, Preparing Farm Horses for Summer Work, by E. S. Archibald, Dominion Animal Husbandman.
- No. 6, Produce More Poultry Products, by F. C. Elford, Dominion Poultry Husbandman, and Geo. Robertson, Assistant.
- No. 7, The Dairy Cow, by E. S. Archibald, Dominion Animal Husbandman.
- No. 9, Recommended Varieties of Field Roots, by F. S. Browne, Assistant, Division of Forage Plants.
- No. 10, Field Beans, by W. L. Graham, Assistant Field Husbandman.

A number of additional exhibition circulars were issued, together with revised editions of many of those formerly brought out. Altogether, some ninety-five of these circulars are now in print. "Seasonable Hints" Nos. 5, 6, and 7, were brought out and distributed during the year.

ENLISTMENTS AND CASUALTIES.

We record below the enlistments from the Experimental Farms Branch from April 1, 1916, to March 31, 1917:—

Following this is a list of casualties among members of this branch from the beginning of the war up to the close of the fiscal year of 1916-17:—

ENLISTMENTS DURING FISCAL YEAR ENDING MARCH 31, 1917.

Blair, W. T.
Cannon, A.
Campbell, L.
Campbell, Wm.
Davis, M. B.
Fader, R.
Fahey, T.
Foley, Wm.
Fraser, J.
Gregory, O.
Halfpenny, E.
Hatherall, F.
Heatherton, W.
Hirsch, R. J.
Hunter, H.
Joyce, M.
Kemp, A.
King, Wm.
Lindsay, C.
Matthews, V.
McCrady, D. W.
McDonald, H.
McDonald, J.
Morley, A.
Paris, R. J. C.
Pollock, A.
Ramsay, R. L.
Ronaldson, B.
Smith, A.
Snider, H.
Verne, B.
Ward, N. A.
Williams, G.
Williams, J. C.

CASUALTIES.

V. Armstrong, killed in action.
J. W. Boston, killed in action.
R. I. Donaldson, killed in action.
G. Dorgans, wounded.
F. L. Drayton, wounded.
C. F. W. Dreher, wounded.
W. A. Gordon, died.
C. Harrison, killed in action.
P. Humbert, killed in action.
H. H. Lindesay, missing, presumed killed.
R. W. Nichols, killed in action.
H. Neeley, missing, presumed killed.
R. J. C. Paris, killed in action.
S. H. Valiant, killed in action.

SESSIONAL PAPER No. 16

EXPERIMENTS AT FORT VERMILION, ALTA.

The season of 1916 was a very favourable one in all branches of the work at this Substation, and in the Fort Vermilion district. Grain and oats gave excellent crops, hay was plentiful, and potatoes gave a good yield. There was no sign of rust on the wheat, which averaged for the district about 30 bushels per acre, oats 90, and barley 65.

There was ample rainfall throughout the season. The first frost occurred August 28, but was very slight and did little damage. The first killing frost (9 degrees) came September 23. The excellent fall weather allowed of harvesting and fall work in general being completed under favourable conditions.

CEREALS.

Seven varieties of wheat were tested, namely, Prelude, Red Fife, Bishop, Stanley, Huron, Marquis, and Marquis (registered). The yields ranged from 65 bushels per acre for Huron to 49 bushels 30 pounds for Prelude, the average for the seven sorts being 57 bushels per acre. The test plots were one-thirtieth of an acre each.

Seven varieties of oats were sown: Improved Ligowo, Tartar King, Banner, Daubeney, Black Mesdag, and Garton's Regenerated Abundance. Tartar King was highest, with a yield of 108 bushels 18 pounds per acre, and Garton's Regenerated Abundance lowest, 69 bushels 8 pounds. The average yield for the six varieties was 89 bushels 2 pounds.

In barleys, five varieties, Manchurian, Success, Champion, Mensury and Hulless White were tried. Manchurian gave the highest yield 71 bushels 12 pounds. Success and Hulless White were lowest with 61 bushels 12 pounds each. The average of the five varieties was 65 bushels 12 pounds per acre.

Arthur and Prussian Blue peas gave yields of 39 bushels 30 pounds and 39 bushels, respectively.

Spring rye and flax were tried on the Station for the first time.

The flax attained an average length of 26 inches, yielding 17 bushels 8 pounds of seed and 1 ton 400 pounds straw per acre. The spring rye gave a yield of 33 bushels 42 pounds per acre.

In the vegetable garden, lettuce, radish, table beets, carrots, onions, parsnips, cabbage, cauliflower, tomatoes, spinach, cucumbers, asparagus, squash, peas, and beans were successfully grown, and a good yield obtained with almost all varieties tested. Ripe tomatoes were being picked by the end of August.

The results with vegetables at the Fort Vermilion Station have been almost uniformly successful. The method followed is to set aside twice as much land as will be needed each season. Fifteen loads of manure per acre is applied, then the land is ploughed 7 inches deep, and surface cultivation given to keep down weeds and conserve moisture. The land to be planted next spring is not ploughed again, but given surface cultivation to form a good seed-bed. During the growing season sufficient cultivation is given to keep up a loose surface mulch. By following this system most of the preparatory work can be done when other farm work is not pressing.

The potato crop in 1916 was above the average. Six varieties were tested, namely, Rochester Rose, Early Rose, Gold Coin, Carman No. 1, Irish Cobbler and King Edward, the latter being a new variety tried for the first time.

Gold Coin gave the highest yield, 450 bushels 30 pounds per acre, and Early Rose the lowest, 315 bushels 30 pounds. The average yield per acre of the six varieties was 378 bushels 31 pounds per acre.

Five varieties of field corn were grown for ensilage. The warm weather and ample rainfall resulted in good crops of fodder being grown. All varieties when cut

were in good condition for making ensilage. The highest yield per acre weighed was 22 tons 200 pounds per acre from Longfellow, and the lowest, 10 tons 810 pounds from King Philip. The average yield of the five varieties was 17 tons 42 pounds per acre.

In root crops, five varieties of turnips gave an average yield of 23 tons 400 pounds per acre. Five varieties of mangels averaged 22 tons 1,500 pounds per acre. Ontario Champion and White Belgian carrots gave a crop of 17 tons 500 pounds, and 13 tons 1,000 pounds, respectively.

The plots of alfalfa and clover wintered well in 1915-16, and were cut on June 23-24. A second cutting of alfalfa was made on August 18-19. Duplicate plots of timothy, awnless brome, western rye grass, meadow fescue, and Kentucky blue grass were sown on May 26. The first season's growth was satisfactory.

Six varieties of alfalfa gave an average yield, first cutting, of 1 ton 1,650 pounds, and for the second cutting, an average of 1 ton 1,670 pounds per acre. Red clover, one cutting, gave 2 tons 380 pounds per acre. The grasses yielded: timothy, 2 tons 100 pounds; brome grass, 2 tons 1,540 pounds; and western rye, 2 tons 1,600 pounds per acre.

The season was a very favourable one for flowers, which bloomed profusely from June until October.

There was considerable winter injury of the apple and plum trees during the winter of 1915-16, but most of these recovered well and made good growth. Altogether, out of 170 trees set out in 1914, 143 were alive in 1916. Two of the cross-bred varieties of apple, Charles and Silvia, fruited in 1916.

Strawberries, of which six varieties were grown, gave fair yields.

TABLE of Meteorological Observations taken at Fort Vermilion, Peace River District, Alberta, from April 1, 1916, to March 31, 1917, showing maximum, minimum, and mean temperature, the highest and lowest for each month, with date of occurrence; also rainfall, snowfall, and total precipitation.

Month.	Maximum.	Minimum.	Range.	Mean.	Highest.	Date.	Lowest.	Date.	Rainfall.	Snowfall.	Total Precipitation.	Number of days Precipitation.	Heaviest in 24 hours.	Date.
	°	°	°	°	°		°		Ins.	Ins.	Ins.		Ins.	
April	48·37	19·58	28·79	33·97	60·0	26	− 3·0	3	.....	.....	.....	.....	.....	.....
May	61·09	31·56	29·53	46·32	79·5	19	22·0	2	1·90	.....	1·90	5	1·25	7
June	71·66	40·75	30·91	56·20	84·0	29	28·9	5	1·98	.....	1·98	9	1·25	4
July	71·20	43·66	27·53	57·42	87·5	1	33·2	24	4·04	.....	4·04	13	1·50	14
August	69·57	37·70	31·81	53·60	82·9	13	24·0	31	0·42	.....	0·42	4	0·19	7
September	60·50	31·87	28·63	46·18	77·5	18	22·9	23	1·56	.....	1·56	5	1·05	10
October	43·04	20·85	22·19	31·94	66·0	10	8·9	31	0·83	1·50	0·98	4	0·75	13
November	23·61	− 1·62	25·23	10·99	47·9	17	−23·0	12	.....	2·75	0·27	4	0·10	2
December	−3·24	−26·00	22·76	−14·62	18·9	4	−55·0	11	.....	8·00	0·79	5	0·25	11
January	−4·80	−30·64	26·16	−17·56	42·0	8	−60·0	31	.....	4·50	0·44	7	0·10	10
February	1·23	−24·97	26·20	−11·87	29·5	15	−71·0	1	.....	2·00	0·20	2	0·15	15
March	25·48	−11·64	37·13	6·92	41·9	28	−39·0	2	.....	16·50	1·65	3	0·80	30
									10·73	35·25	14·23	61		

Some Weather Observations taken at Central Experimental Farm, Ottawa, as compared with those taken at Fort Vermilion, Peace River District, Alberta.

—	Mean Temperature.	Highest Temperature.	Lowest Temperature.	Total Precipitation.	Heaviest in 24 hours.	Total hours sunshine.	Average sunshine per day.
April.	°	°	°	Ins.	Ins.		Hrs.
Ottawa	43·25	73·4	18·6	2·70	0·77	176·0	5·86
Fort Vermilion	33·97	60·0	−3·0	.....	.....	247·0	8·23
May.							
Ottawa	54·00	81·8	33·0	6·89	2·99	209·7	6·76
Fort Vermilion	46·32	79·5	22·0	1·90	1·25	275·7	8·89
June.							
Ottawa	62·30	82·5	41·0	4·24	0·89	194·2	6·47
Fort Vermilion	56·20	84·0	28·9	1·98	1·25	367·9	12·26
July.							
Ottawa	74·72	100·3	52·0	1·50	0·77	312·7	10·08
Fort Vermilion	57·42	87·5	33·2	4·04	1·50	280·3	9·04
August.							
Ottawa	70·25	97·8	44·0	1·73	0·45	275·6	8·89
Fort Vermilion	53·60	82·9	24·0	0·42	0·19	318·9	10·28
September.							
Ottawa	58·83	83·0	36·0	3·15	0·89	159·2	5·30
Fort Vermilion	46·18	77·5	22·9	1·56	1·05	195·9	6·53
October.							
Ottawa	45·78	76·8	23·6	2·92	0·62	166·2	5·36
Fort Vermilion	31·94	66·0	8·9	0·98	0·75	111·9	3·60
November.							
Ottawa	31·12	62·4	−2·0	1·78	0·45	111·1	3·70
Fort Vermilion	10·99	47·9	−23·0	0·27	0·10	62·9	2·09
December.							
Ottawa	16·62	46·0	−20·0	2·47	0·85	86·0	2·77
Fort Vermilion	−14·62	18·9	−55·0	0·79	0·25	56·9	1·83
January.							
Ottawa	10·90	33·0	−20·2	4·05	0·77	76·8	2·47
Fort Vermilion	−17·56	42·0	−60·0	0·44	0·10	89·5	2·88
February.							
Ottawa	6·24	37·0	−25·2	1·94	0·42	133·7	4·77
Fort Vermilion	−11·87	29·5	−71·0	0·20	0·15	108·6	3·87
March.							
Ottawa	24·13	50·4	− 3·0	3·79	1·10	173·8	5·60
Fort Vermilion	6·92	41·9	−39·0	1·65	0·80	166·0	5·35

RECORD of Sunshine at Fort Vermilion, Peace River District, Alberta, from April 1, 1916, to March 31, 1917.

Months.	Number of days with Sunshine.	Number of days without Sunshine.	Total hours Sunshine.	Average Sunshine per day.
April	28	2	247·0	8·23
May	29	2	275·7	8·89
June	29	1	367·9	12·26
July	29	2	280·3	9·04
August	31	0	318·9	10·28
September	25	5	195·9	6·53
October	20	11	111·9	3·60
November	18	12	62·9	2·09
December	16	15	56·9	1·83
January	22	9	89·5	2·88
February	21	7	108·6	3·87
March	27	4	166·0	5·35

EXPERIMENTS AT GROUARD, ALBERTA.

Snow had disappeared from the cultivated land by April 15, and prospects were bright for early seeding. The work was interrupted, however, by wet weather, and seeding was not completed until May 4. By the 18th all grains were up and growing well in spite of rather cold weather.

On June 1, there was a heavy frost, and several farmers had to resow their grains. The weather throughout the month was cool and dry.

There was an abundant rainfall on July 4 and 5, the weather became warmer, and the remainder of the season was favourable to growth, although with some quite cold nights.

On August 10, frost affected the grain slightly in certain districts, but not on the Substation.

Cereals.—Three varieties of oats, two of barley, three of wheat, and one of peas were sown on May 1 in one-twentieth acre plots. The peas were destroyed by frost on August 10. The following results were obtained:—

—	Date of Maturity.	Days Maturing.	Yield per acre.
			bush. lb.
Oats—			
Daubeney	Aug. 18	110	38 8
Banner	Sept. 2	125	57 2
Ligowo	Sept. 2	125	51 6
Barley—			
Manchurian	Aug. 26	118	29 28
Success	Aug. 8	100	21 32
Wheat—			
Prelude	Aug. 15	107	19 20
Marquis	Sept. 1	124	24 20
Huron	Sept. 10	124	25 20

Vegetable Garden.—Six varieties of cabbage and two of cauliflower were sown in the hotbed April 12, and transplanted June 5 and 6. Ready for use, July 18.

The following were sown in the open on May 3: *Beets,* three varieties, ready for use August 15. *Carrots,* three varieties, ready for use July 13. *Onions* all did well and gave good yields. *Lettuce,* five varieties, all did well. *Radish,* three varieties, much injured by white worms. *Peas,* seven varieties, all did well; Alaska, Gradus, and Gregory's Surprise ready for use July 15.

Tomatoes.—Five varieties promised well, but were destroyed by frost August 10. A few ripe fruits had been gathered before that date.

Flowers.—The following annuals grew well and bloomed freely: Aster, chrysanthemum, petunia, nemesia, clarkia, stocks, nicotiana, phlox drummondii, and scabiosa.

Perennials, such as poppy, digitalis, achillaea, campanula, chrysanthemum, leucanthus, gypsophila, and carnations did well.

In flowering shrubs, the lilacs suffered a little from the cold and drought. The spiræas flowered well.

Red currants and strawberries gave excellent crops. Two hybrid apple trees, Charles and Sylvia, yielded some fruit.

EXPERIMENTS AT BEAVERLODGE, ALTA.

Experimental work at this point was carried on, as during the previous year, by by Mr. W. D. Albright.

The year 1916 was unfavourable to crops in the Grande Prairie district, the weather at the beginning of the year being extremely cold, a minimum temperature of 48½ degrees below zero being recorded at Beaverlodge. Fall wheat and alfalfa suffered from the cold winter, and were not in a condition to withstand the unfavourable spring and early summer. Spring opened early and dry, not much precipitation being recorded until July. A severe frost on August 9 destroyed about three-quarters of the grain crop, and this was followed by another severe frost about a week later.

Three varieties of wheat were tried, the lowest, Prelude, yielding 5 bushels to the acre, while the highest, Huron, gave 34 bushels.

Victory oats yielded 98 bushels to the acre, and O.A.C. No. 21 barley, 30 bushels per acre, these being the highest yielding varieties of these grains.

Timothy and red clover gave very poor returns, owing to unfavourable weather conditions; the alfalfa gave only a fair crop, but western rye grass gave a very good yield.

Nine varieties of field roots were tried in duplicate plots, but adverse weather conditions delayed their growth, and the yields were low.

The results with garden vegetables were below the average.

Forty Manitoba maples and caraganas were wintered successfully, and transplanted from the nursery row.

A beginning was made with an experimental fruit plantation, consisting of apple trees, currant bushes, and raspberry canes. The apple trees and currant bushes made very promising development, but the raspberries were late in starting.

TABLE of Meteorological Observations taken at Beaverlodge, Alberta, from April 1, 1916, to March 31, 1917, showing maximum, minimum, and mean temperature, the highest and lowest for each month, with date of occurrence; also rainfall, snowfall, and total precipitation.

Months.	Maximum.	Minimum.	Range.	Mean.	Highest.	Date.	Lowest.	Date.	Rainfall.	Snowfall.	Total Precipitation.	Number of days Precipitation.	Heaviest in 24 hours.	Date.
	°	°	°	°	°		°		Ins.	Ins.	Ins.		Ins.	
April	51·46	29·30	22·16	40·38	62·0	13 & 25	21·0	15	0·086	.....	0·086	2	0·85	28
May	60·46	35·83	24·62	48·14	73·0	27	24·0	23	0·215	.....	0·215	4	0·25	19
June	70·05	44·51	25·53	57·27	82·0	17	25·0	1	0·455	.....	0·455	5	0·34	19
July	66·77	44·58	22·19	55·67	79·0	1 & 2	34·0	25	5·90	.....	5·90	10	2·62	33
August	68·16	43·16	25·00	55·66	83·5	27	27·0	10	0·47	.....	0·47	3	0·50	30
September	60·44	37·86	22·58	49·15	77·5	17	27·0	13	0·52	.....	0·52	4	0·20	26
October	51·50	30·74	20·75	41·11	71·0	10	17·0	1	0·36	2·00	0·56	4	0·27	15
November	35·08	17·68	17·40	28·36	51·0	15	−12·5	11	.....	1·00	0·1	3	0·10	22
December	15·18	−3·45	18·63	5·86	39·0	15	−36·5	26	.....	15·00	1·50	6	0·40	10
January	11·85	−7·43	19·29	2·21	45·0	7	−52·0	30	.....	25·00	2·50	9	0·60	25 & 26
February	15·46	−6·25	21·71	4·60	47·0	15	−46·0	1	0·2	8·00	1·0	5	0·30	1
March	31·82	10·90	20·91	21·35	40·5	17	− 1·0	14	.....	9·50	0·95	6	0·30	13 & 29
									9·61	61·50	15·76	61		

NOTE.—Temperatures were not recorded on June 9, September 16, and December 2, therefore the mean temperature for June and September is for twenty-nine days only, and for December it is for thirty days only.

EXPERIMENTS AT FORTS SMITH, RESOLUTION AND PROVIDENCE.

FORT SMITH.

The experimental work was carried on partly at Fort Smith and partly at St. Bruno, about 20 miles distant.

Speaking generally, the season of 1916 was a favourable one, especially for vegetables. The spring opened early, and snow had disappeared by the end of April, and the land was ready for sowing by May 8-12.

Three varieties of carrots, four of onions, five of turnips, three of beets, and four of mangels were grown; also one variety of cabbage and two of tomatoes.

Five varieties of potatoes were tested.

Timely rains throughout the growing season, with a fair amount of warm weather, resulted in good yields of most garden crops. Tomatoes grew to good size, but did not mature, however, owing to lack of really hot weather. Potatoes were an excellent crop, Early Rose, Rochester Rose, and St. Albert Red (a local sort) giving the best returns.

Twelve acres of oats were sown at St. Bruno, and 2 acres at Fort Smith. In the former locality the growth was very rapid but heavy rains, at the time of heading out, destroyed the crop. At Fort Smith, where the oats had been sown earlier, the rain did no damage, and a good crop was obtained.

At the St. Bruno farm a herd of some seventy head of cattle is maintained during the summer. A pure-bred bull has been sent in to head this herd.

FORT RESOLUTION.

The season of 1916 was not so favourable as the two preceding years. Spring was late in opening, cold weather continuing until the middle of May. Work on the land commenced May 13. A period of dry, cold weather followed seeding up to June 10, and from then on hot weather, with no rainfall, prevailed until July 3.

Under these conditions, germination was very slow, and it was not until after an abundant rainfall on July 17 and 18 that growth was general and vigorous. This was too late to allow many crops to mature before the first frosts of autumn.

Severe damage was done to the cereal crops by field mice. These appeared in myriads during the first half of September and, it is estimated, destroyed nine-tenths of the grain crops. Three varieties of oats were tested, two of wheat, and two of barley. All these were promising a good yield when practically destroyed by the mice. Early potatoes yielded a fair crop. Growth was delayed by drought, so that the tops were still green at the time of the first frost, September 10. Four varieties were tested.

Roots.—These were kept back by drought, and the yield was only average. Mice injured the turnips considerably. Carrots were almost a failure, owing to drought.

The yield of prairie hay was not very heavy.

At present the mission has six oxen, a bull, and four cows.

Garden crops gave very light yields, owing to drought in the early part of the season. The young fruit trees made fair growth, but did not fruit.

Flowers bloomed fairly well.

METEOROLOGICAL OBSERVATIONS, 1917.

Month.	Maximum	Minimum	Rainfall.	Depth of snow.
	°	°	Ins.	Ins.
January	−15·8	−20·1	.....	5
February	− 8·3	−19·5	.....	10
March	−14·3	−19·4	.....	5
April	37·4	17·3	.....	00
May	54·5	31·7	0·21	2
June	65·5	41·4	0·28	
July	69·3	49	1·87	
August	64·5	42·5	1·13	
September	57·4	37	0·28	
October	34·7	23·4	.....	5

FORT PROVIDENCE.

The mission farm at this fort is situated on the right bank of the Mackenzie River, some 40 miles from Great Slave Lake.

The farm dates from 1865, although then it consisted merely of a small garden before a little cabin built to accommodate two people. Two years later, in 1867, the Grey Nuns of Montreal arrived to found a convent. They brought some cattle with them, the land under cultivation was increased, and has grown steadily since. The area under field crops is now over 160 acres, while about 19½ acres is devoted to vegetables, fruits, and flowers.

Among vegetables, cabbage, cauliflower, turnips, beets, onions, carrots, radish, rhubarb, and peas, generally succeed well. In fruits, strawberries, currants, and raspberries are grown. In flowers, there is a profusion of bloom from about the end of May on, from field lilies, violets, roses, poppies, and stocks.

In 1916, potatoes were planted, May 18, 19, and 20. The earlier varieties came into use August 10. The yield of all sorts was an average one.

Other garden crops promised excellent yields, but early in June, vast numbers of grasshoppers appeared, the ground near the buildings being completely covered with them. At first they devoured the tender grass only, but soon invaded the gardens and ate everything except the potatoes and lettuce. They also cut down the young wheat, but it grew up again and gave a rather light yield. The sample, however, was excellent.

EXPERIMENTAL WORK AT SALMON ARM, B.C.

The growing season, and in fact the whole year, in this district was an abnormal one. The rainfall during the growing season was very light, and the summer very cool. The winter temperature showed a great range and, as a result, serious winter damage was done to many orchards where clean cultivation had been followed until late autumn, as this kept the trees growing until winter set in and, as a result, the wood was not sufficiently matured to withstand extreme temperatures.

In the orchards on Mr. Thos. A. Sharp's farm, where the experimental work is being carried on, cultivation ceased in July, the trees suffered very little winter injury, and a very good crop was gathered in 1916. Several varieties of apple fruited for the first time, and some of these seem promising. Of the present well-known commercial varieties, the Duchess, Yellow Transparent, Wealthy, MacIntosh Red, Grimes, and Jonathan appear to be the most satisfactory in the Salmon Arm district.

In pears, the Dr. Jules Guyot produced a fair crop of very fine fruit.

The Greengage and Washington plums did well, and are popular varieties for the market.

Of cherries, the Morello and Duke seem to be the only varieties hardy enough for the district.

Peach trees, some of which had borne a small crop in previous years, were killed back to the snow-line in the winter of 1915-16. Grapevines were also killed back, but made new growth during the summer, and may fruit in 1917.

Raspberries and currants fruited well. Blackberries were killed back.

A supply of home-grown carrot seed, gathered in 1915, was tested last season in comparison with commercial seed of the same variety. The results were strongly in favour of the home-grown seed, which germinated better, and produced more vigorous plants.

METEOROLOGICAL RECORD, 1916-17.

1916.	Date of highest Temperature.	Degree.	Date of Lowest Temperature.	Degree.	Rainfall.	Snowfall.	Sunshine.
					Ins.	Ins.	Hrs. Min.
April	26	68	22	25	0·70	.....	164 48
May	3	77	10	28	1·09	.....	206 24
June	17	94	5-10	37	1·90	.....	214 18
July	30	87	25	41	2·87	.....	232 36
August	13	93	18	39	1·00	.....	302 24
September	1	88	30	23	0·32	.....	200 06
October	16	75	3	20	0·19	.....	172 42
November	22	56	11	8	1·07	5	76 12
December	23	40	8	−11	.....	22¼	33 12
1917.							
January	8	38	30	−31	.....	36¾	38 48
February	16	50	23	−16	.....	20	64 18
March	17-23-29	46	1	− 4	.....	15½	121 24
					9·20	99½	1,825 12

DIVISION OF CHEMISTRY.

REPORT OF THE DOMINION CHEMIST, FRANK T. SHUTT, M.A., D.Sc.

Correspondence and Publicity.—The correspondence from farmers, dealing with matters relating to the economic improvement of soils, the use of manure and fertilizers, the nutritive value of feeding stuffs, forage crops, etc., has very considerably increased in volume during the past year and has been satisfactorily dealt with, and, as far as may have been possible, the samples of an agricultural nature (over 2,200) submitted by farmers have been examined and reported on. The campaign for greater production has also been assisted by the writing of special articles and bulletins.

SAMPLES received for Examination and Report during the twelve months ending March 31, 1917.

—	British Columbia.	Alberta.	Saskatchewan.	Manitoba.	Ontario.	Quebec.	New Brunswick.	Nova Scotia.	Prince Edward Island.	Total.
Soils	52	942	13	1	34	60	35	5	.....	1,142
Muds, mucks, and marls	5	.....	.....	.....	12	12	10	7	4	50
Manures and fertilizers	7	1	1	.....	35	54	18	25	.....	141
Forage plants and fodders	45	21	21	5	212	43	7	12	30	396
Meat Inspection Division samples	.....	.....	.....	.....	851	.....	.....	.....	.....	851
Miscellaneous, including War Office supplies, dairy products, fungicides, etc.	11	11	3	2	776	41	8	8	1	861
Waters, including rain and snow	8	13	19	2	199	22	14	7	11	295
										3,736

Meat Inspection Work.—The work in the examination of packing-house products submitted for analysis by the Meat Inspection Division, Health of Animals Branch, has increased. Over 800 samples in this connection have been analysed and reported on. Their classification may be given as follows:—

Nature of Sample.	Number received.
Lards, tallows, oils	36
Preserved meats, sausages, mince meats	76
Colouring and dye stuffs	84
Preservatives	101
Pickling solutions	21
Spices and condiments	42
Evaporated apples and waste	462
Miscellaneous	29
	851

Agricultural Meteorological Research.—Progress has been made in the investigation dealing with the influence of seasonal conditions on crop growth. This research, now extended through the co-operation of the Meteorological Service, gives promise of results of wide-reaching importance to Canadian agriculture.

Soils from Irrigation Tracts in Alberta.—The examination of typical soils from tracts in southern Alberta about to be placed under irrigation has been proceeded with, 225 samples being submitted to analysis. This work was undertaken with a view to assisting the Department of the Interior in its reclassification of the areas involved into irrigable and non-irrigable lands.

Insecticides and Fungicides.—Analyses of a number of insecticides and fungicides have been made, and their indicated value recorded.

Fertilizing Value of Rain and Snow.—The fertilizing value of rain and snow has been determined throughout the year. This concludes the first decade's work in the investigation. The yearly average for the ten-year period shows that 6·583 pounds of nitrogen per acre, available for crop growth, have been furnished from this source.

Feeding Stuffs and Forage Crops.—Much valuable work has been accomplished by analytical determinations of the composition and relative nutritive value of a large number of mill feeds and forage crops. Directly or indirectly, prices of milling and industrial by-products of feeding value have reached figures hitherto unknown in the Dominion, and there is no immediate prospect of their reduction. Further, while many of the well-known feeds have been kept up to their standard quality, there have appeared on the market not a few that are exceedingly poor—some practically worthless, and these are sold at prices little, if anything, below those of feeds far superior in nutritive value. Under these conditions the economical purchasing of concentrates has become a problem of no small importance, one that it well repays to study closely, and especially will this be true on farms requiring large amounts of bought feed. More than ever before, the farmer must study not merely the relative prices of the various feeds upon the market, but also their composition, especially as to their percentages of protein, fat, and fibre. Price is not invariably and inevitably an indication of nutritive value. This we have repeatedly shown, and the farmer must endeavour to correlate price with composition before making his selection. If in this he needs assistance, we shall be glad to advise, provided he can furnish the necessary information as to prices and the quality of the feeds he has under consideration.

The by-products used as feeds find their value, chiefly: first in their protein content and, secondly, in their percentage of fat or oil. A low percentage of fibre enhances their nutritive value.

Brans and Shorts.—During the year, examinations were made of samples taken from brans and shorts used in the feeding experiments at the Central Experimental Farm by the Division of Animal Husbandry. These samples fairly represent these products as milled and sold by several of the larger milling companies of Canada.

Bran.—In the brans, protein, the most valuable of the nutrients, ranged from 13·23 per cent to 15·58 per cent, with an average of 14·42 per cent. The average from a series of Canadian brans, analysed by us in 1903, was 14·52 per cent. In fat the members of the series differ from one another merely in fractions of one per cent, the average being 4·74 per cent. In fibre, recent samples show more variation than usual, the range being 7·91 per cent as a minimum and 11·19 per cent as a maximum, with an average of 9·80 per cent. The average for the 1908 samples was slightly higher, 10·40 per cent.

The Commercial Feeding Stuffs Act calls for the following standard for bran: protein not less than 14 per cent, fat not less than 3 per cent, and fibre not more than 10 per cent.

Shorts.—As in 1903, we find the shorts slightly higher than bran in protein content. The limits of these examined during the year are 15·41 per cent and 16·14 per cent, with an average of 15·74 per cent. The average for the 1908 samples was 15·93 per cent.

In fat, the samples now referred to vary from 3·16 per cent to 6·32 per cent, the average being 4·60 per cent, as compared with an average of 5·24 per cent of fat in the 1903 samples.

The fibre-content of shorts should be considerably lower than that of bran. The average of the present samples is 6·47 per cent, decidedly higher than that found in 1903, which was 5·23 per cent.

The standard quality fixed for shorts by the Commercial Feeding Stuffs Act reads: protein not less than 15 per cent, fat not less than 4 per cent, and fibre not more than 8 per cent.

Miscellaneous Mill Feeds.—Of the mill feeds sent in by farmers, many were found to be of exceedingly low nutritive value. Among such may be cited, particularly, laboratory numbers 27455 and 28738, which consisted essentially of fibrous oat hulls.

Effect of Rust on Wheat Straw.—The feeding value of straw from wheat affected with rust has been made the subject of an inquiry. The occurrence of rust in certain districts of Manitoba and Saskatchewan last season (1916) makes the results obtained of considerable importance at this time. Briefly, the data indicated that rust tends to arrest the development of the wheat plant, inducing a premature ripening of the plant and resulting in a straw of presumably greater feeding value than that of normally matured wheat and in a much shrivelled grain slightly higher in protein than the larger, plumper grain from rust-free wheat. The deduction as to the superior feeding quality of the rusted straw was made from the analysis based on its higher percentage of protein and its lower fibre-content, as compared with rust-free straw. It is worthy of note that several farmers reported that straw, more or less rusted, was eaten by cattle with avidity, and that it was taken in preference to fully mature rust-free straw. It, however, should be added that cattle entirely refuse straw that is very seriously affected with rust.

Relative Value of Field Roots.—The investigations regarding the feeding value of field roots—mangels, turnips and carrots—and the quality of sugar beets for factory purposes, as grown on the several Farms and Stations of the system, have been continued.

Yield and keeping quality are usually the two factors chiefly considered by the farmer in making his selection of varieties, and rightly so; but our investigation,

carried on since 1904, has conclusively shown that the several varieties offered for sale —and especially so in the case of mangels—differ considerably in their nutritive value. The nutritive value or feeding qualities of field roots will be measured by their dry-matter content and the percentages of sugar in the dry matter. Since difference in these particulars may in certain cases amount to almost 100 per cent, it will be in the interest of the farmer to consult these records when deciding on the varieties to grow.

Mangels.—Unfortunately, the season of 1916 at Ottawa was most unfavourable for root culture. Owing to an exceedingly wet spring, sowing was very late, and the summer was exceptionally hot and dry. These conditions, coupled with the fact that the roots under experiment were sown on a muck soil which was ill suited to withstand this untoward season, resulted in very poor yields of small roots which, taking the series—twenty-six varieties—as a whole, are decidedly lower in dry matter and sugar than those previously examined at Ottawa.

The variety, Giant Half Sugar White headed the list with 10·37 per cent of dry matter and 5·18 per cent of sugar, while at the bottom of the list appears the Svalof Red with but 6·24 per cent of dry matter and 0·92 per cent of sugar.

Mangels, Source of Seed.—Very interesting data are furnished in this connection, for they permit a comparison of the quality of mangels grown from Canadian seed produced on several of the Experimental Farms and Stations and from seed obtained in commerce, which was probably of United States or European origin.

Three varieties of mangels are represented in the series, and the roots analysed were all grown on the Central Experimental Farm, Ottawa.

In the case of Danish Sludstrup, seed from three Experimental Farms and Stations—Agassiz, B.C.; Charlottetown, P.E.I.; and Kentville, N.S.—and commercial seed was sown. In dry-matter content and sugar the roots from the Canadian-grown seed, in all three instances, have given higher results than those from commercial seed. It must be remarked, however, that the roots from the Kentville seed, though quite satisfactory as to dry matter, are markedly low in sugar, and that the Charlottetown seed produced roots but slightly superior to those from the purchased seed. Seed of Mammoth Long Red was used from three sources—Charlottetown, Ottawa, and commercial. The roots from the Charlottetown and Ottawa seed are practically identical as to composition, and approximately 2 per cent richer in dry matter than the mangels from the commercial seed. Similarly, the mangels from Canadian seed contain about twice as much sugar as those from the commercial.

The sources of seed used for the Yellow Intermediate variety were the same as for the Mammoth Long Red. The differences in dry matter between the roots are not marked, yet, such as they are, favour the mangels from Canadian-grown seed. Of the three, the roots from the Charlottetown seed are decidedly the richer in sugar.

It is very satisfactory to note that, throughout the series, the mangels from the Canadian-grown seed have proved superior to those from the commercial seed.

Sugar Beets for Factory Purposes.—During the season of 1916 three varieties of sugar beets were grown on seventeen Experimental Farms and Stations of the system. This inquiry as to the suitability of soil and climatic conditions in the several provinces for the growth of sugar beets for factory purposes was begun in 1902, and the data so amassed increase in value with each year's results. The work to date has conclusively shown that beets of excellent quality for sugar extraction have been produced in the larger number of provinces, and we are thus in a position to state that in so far as the quality of the raw material—the sugar beet—is concerned, the further development of the beet sugar industry in Canada might be successfully prosecuted at many points.

Hitherto, the seed used in this investigation has been procured from Messrs. Vilmorin, Andrieux et Cie., Paris, France, the noted breeders of sugar beets, the

varieties being Vilmorin's Improved, Klein Wanzleben, and Très Riche. Owing to war conditions, however, we were unable to obtain a supply of seed from this firm for the season of 1916. This was most unfortunate, as thereby the continuity of the investigation was, in a certain measure, broken. We were, however, able to procure a supply of good, suitable seed through the courtesy of the Dominion Sugar Company, Wallaceburg, Ontario, though particulars as to the "breeding" of the seed and the names of the varieties supplied could not be furnished. The varieties used are designated German, Italian and Ontario, by which it is intended simply to indicate that the three lots of seed were grown in Germany, Italy and Ontario, respectively. Presumably, however, they are from varieties, the value of which for factory purposes has been well established, for the results give ample evidence of the high quality of the produce.

According to the superintendents' notes, the season of 1916 has been unfavourable for sugar-beet culture at a number of the Farms and Stations. Taken as a whole it has been a poor year from the climatic or seasonal standpoint; nevertheless, the data show the results to have been most satisfactory at a majority of the Farms and Stations. The average sugar content in juice of the beets at four of the seventeen localities was over 19 per cent; at six, between 18 and 19 per cent; at one, between 17 and 18 per cent; at two, between 14 and 16 per cent; and at two, between 12 and 14 per cent.

In addition to the foregoing series, in which the beets were grown on the Dominion Experimental Farms and Stations, a number of samples of sugar beets from farmers and others throughout the Dominion have been received and analysed.

Well Waters from Farm Homesteads.—The analysis of well waters from farm homesteads continues an important branch of our work.

It may be desirable to point out again that our work in this connection is restricted to the examination of farm supplies and those of creameries and cheese factories. Analysis cannot be undertaken of mineral waters, waters of alleged medicinal value, and the water supplies of cities and towns.

Farmers desiring an analysis should apply to the Division for the instruction form which gives directions regarding the quantity of water required, the method of collection, shipment, etc. A large number of water samples are received every year, which it is quite impossible to submit to analysis owing to insufficient quantity, dirty containers, etc. Expense and disappointment will be obviated if the "instructions" are first obtained. No fee is charged for the analysis, but the express charges on the sample must be prepaid.

In reporting the results to the sender of the sample, a full, detailed account is given of the nature of the pollution (where such has been found) and the possible means of purification.

The Year's Work in Water Analysis.—Classifying our reports on these waters, we find that 14 per cent were pronounced as of first-class quality; 25 per cent as suspicious and probably dangerous; 32 per cent as seriously polluted; and 19 per cent as too saline to be potable.

Fertilizer Materials.—The continued and ever-increasing interest in the subject of liming and the application of ground limestone has led to the analysis of samples of limestone from many parts of the Dominion. These, for the most part, have been sent in by provincial agricultural authorities or associations of farmers about to install a crushing plant for the manufacture of ground limestone. Limestones are of variable composition, and since their value for the preparation of ground limestone depends on their percentage of lime, it becomes a matter of great importance to know the richness of any particular outcrop or deposit before the work of grinding is undertaken. The carbonate of lime content of the samples examined during the year ranged from

52·18 to 97·75 per cent. Those containing over 90 per cent are considered of first quality.

Marl is a naturally occurring carbonate of lime, which, owing to its generally soft and friable nature when air-dried, can be readily prepared and easily and uniformly applied to the land. The work of the year has included the analysis of marl from deposits occurring in many parts of Canada. Samples that have been air-dried will, as a rule, contain from 50 to 75 per cent of carbonate of lime; those of superior quality may exceed 90 per cent.

The scarcity of potash in the fertilizer markets has made the analysis of wood-ashes, and ashes from various industrial processes, of particular interest. Information has been furnished as to the fertilizing value of city garbage, ashes etc., and analysis made of several other by-products of a similar character considered of no importance agriculturally.

As in previous years, the fertilizing value of a number of natural organic deposits, mucks, muds, etc., both of fresh and salt-water origin, has been determined. Many of these materials are useful amendments, while in others the plant-food constituents may be present in traces only. The use of air-dried peat and muck as an absorbent litter in the cow barn and piggery is extending. In this way much liquid manure is saved that would otherwise be lost, and the bulk or amount of manure available for application largely increased.

INVESTIGATIONAL WORK WITH FERTILIZERS.

The investigational work with fertilizers, under the immediate supervision of Mr. B. Leslie Emslie, C.D.A., F.C.S., has been considerably extended during the year, and is now carried on at nine of the Farms and Stations of the system.

Experiment "A."—This experiment, designed to ascertain the most profitable quantity and proportional composition of a fertilizer as judged by its influence throughout a three-year rotation period, embraces forty-eight fertilized or manured plots. In the year 1915, experiment "A" was commenced on the Experimental Farms and Stations at Charlottetown, P.E.I., Kentville, N.S., Fredericton, N.B., Cap Rouge, Que., and Agassiz, B.C.; and, in the year 1916, at Nappan, N.S., Lennoxville, Que., and Sidney, Vancouver Island, B.C.

Experiment "B."—This is an accompaniment of experiment "A," and was introduced at the Farms and Stations already named. Its object is to ascertain the relative efficiency of nitrate of soda and sulphate of ammonia as sources of nitrogen, and of acid phosphate, basic slag, and bone meal as sources of phosphoric acid. Experiment "B" embraces fifteen plots variously fertilized. The duration of the test is a three-year rotation period.

Seaweed-Fertilizer Experiment.—In order to ascertain the fertilizing value of dried, ground seaweed, prepared experimentally at Clarke's Harbour, N.S., during the summer of 1915, experiments with the material were conducted last season (1916) on the Farms and Stations at Charlottetown, P.E.I., Kentville, N.S., Nappan, N.S., Fredericton, N.B., Cap Rouge, Que., Lennoxville, Que., and Ottawa. In addition to these, a large number of co-operative experiments with the ground seaweed were conducted by farmers in the Maritime Provinces and Quebec. Whereas, in many instances, the results indicated no very appreciable influence of the seaweed fertilizer, in others—a large majority—the favourable effects were quite decided. The average results from over forty experiments reported showed that ground seaweed alone produced an appreciable increase, and, when supplemented with a phosphatic fertilizer, a quite notable increase over the yield from the unfertilized check plot. A plot with the phosphatic fertilizer alone yielded similarly to that which received ground seaweed alone.

Experiments with Lime and Ground Limestone.—At the Experimental Station, Kentville, N.S., remarkable evidence of the beneficial influence of ground limestone—on the growth of clover particularly—has been obtained. It was evident that the ground limestone permitted a more profitable use of the various fertilizers applied in conjunction therewith.

At the Experimental Station, Cap Rouge, Que., an extensive and comprehensive experiment to ascertain the comparative influence of corresponding applications of burnt lime and ground limestone was commenced in the year 1916. The results from the first crop of the rotation have been recorded.

At the Experimental Station, Fredericton, N.B., waste lime, consisting of a mixture of burnt lime, hydrated lime and ground limestone (carbonate of lime) was employed in several experiments.

Miscellaneous Experiments.—Especially noteworthy are the experiments with market garden crops, at Fredericton, N.B. These have been conducted annually since the year 1914, and each year furnishes accumulating evidence of the greater profits which may be expected from the use of 15 tons, per acre, of manure with suitable fertilizers than from that of 30 tons per acre of manure alone.

An experiment designed to ascertain the comparative values of manure and clover in the maintenance of humus in the soil was commenced last year (1916) at Cap Rouge, Que.

Experiments with dog-fish scrap, conducted throughout a three-year rotation period at the Experimental Stations of Kentville, N.S., and Fredericton, N.B., were concluded last year (1916). The data thus secured indicate the fish scrap to have been a valuable source of nitrogen—not greatly inferior in this respect to nitrate of soda and sulphate of ammonia.

Other experiments, not less interesting than those singled out for special mention, are in progress.

DIVISION OF FIELD HUSBANDRY.

REPORT OF THE ASSISTANT DOMINION FIELD HUSBANDMAN.
W. L. GRAHAM, B.S.A.

The work of the Field Husbandry Division for the past year was conducted along similar lines to those in former years, and included investigations in soil management, crop management and agricultural engineering. These investigations are being carried on at the several branch Experimental Farms and Stations and, in a limited way, at the Central Farm, Ottawa. With regard to the latter the fact is again emphasized that suitable land is not available for carrying on various important experimental tests that should be included and conducted by this Division.

Notwithstanding this handicap, the following data have been gathered during the season:—

WEATHER CONDITIONS AND CROP YIELDS.

The season was most unfavourable for seeding operations. The weather was excessively wet, making work on the land tedious and discouraging. After repeated interruptions, seeding was completed out of season, some areas being sown two and even three times to secure a stand. However, growth was rapid, with prospects for a fair harvest. Hay grew luxuriantly, and a bumper crop of good quality resulted. Grain also did well but ripened prematurely, thus giving a low yield of inferior quality. Roots, forage corn, and potatoes were only fair, but favourable harvest weather prevailed. Conditions for fall ploughing, which was completed in good season, were also satisfactory.

YIELD of Field Crops, Central Farm, 1916.

Crop.	Area.	Total Yield.		Average yield per acre.	
	Acres.	Ton. lb.	Bush. lb.	Ton. lb.	Bush. lb.
Corn	33	411 1,045	.....	12 941	
Oats	39	.....	1,584 30	.....	41 14
Oat straw	39	46 411	.....	1 370	
Hay	33	152 775	.....	4 1,235	
Mangels	3	31 735	1,254 35	10 912	418 12

Cost of Production of Field Crops.—The following data of the cost of production of corn, oats, and hay have been obtained for the year 1916. These results, as well as those for rotations, are determined from fixed values used from year to year regardless of fluctuations in labour and market prices:—

Crop.	Area.	Yield per acre.		Cost to Produce.		
				Per acre.	Per ton.	Per bushel.
	Acres.	Tons.	Bush.	$ cts.	$ c.	Cents.
Corn	33	12·46	.....	27 44	2 20	
Oats	39	.....	44·4	15 98	.....	27·3
Oat straw	39	1·19	.....	15 98	3 22	
Hay	33	4·62	.....	19·97	4 32	

ROTATION OF CROPS.

For various purposes, fifteen rotations are under way at this Farm. From these tests important conclusions have already been drawn, and the results now being obtained are providing valuable data. The rotations being conducted under regular farm conditions are as follows:—

Rotation "A" (five years' duration).—Hoed crop, manured; seeded down with clovers and grass; clover hay, top dressed with manure in autumn; timothy hay, field ploughed in August, top worked and ribbed up in October; grain, seeded down with red clover to be ploughed under the following spring, when the succeeding hoed crop is corn.

Rotation "B" (five years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass, seeds top-dressed with manure in autumn; clover hay, ploughed in autumn; grain seeded down with clovers and grass; clover hay.

Rotation "C" (four years' duration).—Hoed crop, manured; grain seeded down with clover and grass; clover hay; timothy hay, field ploughed in August, top worked and ribbed up in October.

Rotation "D" (three years' duration).—Hoed crop, manured; grain, seeded down with clovers and grass; clover hay.

Soiling Crop Rotation "R" (three years' duration).—Corn for early fall feed, manured; peas and oats to cut green, seeded down with clovers and grass; clover hay to cut green.

The records for the past year from the rotations outlined in the foregoing are given herewith.

COST, Returns, and Net Profits or Losses of Rotations "A," "B," "C," "D," and "R," 1916.

Rotation.	Cost to operate per acre.	Value of returns per acre.	Profit or loss per acre.
	$ c.	$ c.	$ c.
A (five years' duration)	17 73	19 32	1 59
B (five years' duration)	17 58	16 75	−0 83
C (four years' duration)	17 69	17 16	−0 53
D (three years' duration)	20 29	19 64	−0 65
R (three years' duration)	18 73	24 66	5 93

CULTURAL INVESTIGATIONS.

Shallow Ploughing and Subsoiling versus Deep Ploughing.—For this experiment two four-year rotations are used, differing only in the preparation of the sod areas, for roots or corn, as indicated in the foregoing heading. The results to date have failed to show any decided advantage in favour of either method.

Commercial Fertilizer as a Part Substitute for Barnyard Manure.—Four four-year rotations are used in this experiment, which is designed to supply information regarding the fertilizer merits of:—

(1) No manure or fertilizers, but pastured one year in four.
(2) Barnyard manure.
(3) Complete commercial fertilizer.
(4) Barnyard manure and commercial fertilizer.

Again the results show a distinct advantage in using barnyard manure alone over commercial fertilizers alone for this soil, but indicate a possibility of combining the two when barnyard manure is scarce or high priced.

DRAINAGE.

In the autumn of 1916 the already efficient drainage system of the Farm was extended to drain rotation areas "B," "C," and "D." The main drain is completed, and laterals have been placed in those plots broken this season. It is purposed to drain the remaining areas of these rotations as the plots come under the plough.

MISCELLANEOUS.

During the year, besides attending to the duties of the Division, considerable time was devoted to field crop and fall fair judging. Also, ten weeks during the summer were taken up with agricultural land classification work for the Provincial Government of New Brunswick.

DIVISION OF ANIMAL HUSBANDRY.

REPORT OF THE DOMINION ANIMAL HUSBANDMAN, E. S. ARCHIBALD, B.A., B.S.A.

A very successful year may be reported for the live stock on the Central Experimental Farm. The conditions as to housing, feeding, and general management of the stock were excellent. The abundant supply of ensilage remaining over from the previous winter, and the generous quantity of green feeds supplied by the Field Husbandry Division, maintained the milk flow of the cows and the growth of the young cattle, in spite of poor pastures and partial crop failures. The pasture areas are still much too limited for progressive work with the sheep and swine.

There are now 528 head of live stock in the stables, made up as follows: 153 dairy cattle, 31 horses, 156 sheep, and 188 swine. All the live stock have made a very good showing during the past year. The amount of experimental work was greater than the previous year, and more satisfactory. The sales of dairy products amounted to $12,650.16; of dairy cattle, $4,237; of sheep, of mutton, and wool, $1,535.99; and of swine, for breeding purposes and for pork, $4,360.69. These sales, coupled with the increased values of the various herds and flocks, the value of manure and the horse labour supplied to other Divisions, makes a sum total of $44,204.87, which is an excellent return from the live stock on a 200-acre farm.

HORSES.

The horses do all the labour connected with the various Divisions on this Farm. At present there are thirty-one head of horses, which include twenty-three draught horses and draught colts, four expressers, and four drivers. The heavy draught horses include four imported Clydesdale mares, one Canadian-bred Clydesdale mare, and two grade Clydesdale mares. All the horses are in excellent condition. Breeding operations with horses have been very successful on this Farm during the past year, and the crop of excellent filly foals is making substantial progress. One of the imported Clydesdale mares has, this spring, again dropped a splendid foal, and four other mares give every promise of foaling normally. Experimental work along the lines of feeding, care, and management of pregnant mares and foals is most promising for the future.

The horse labour supplied to the various Divisions for the past year amounted to 7,635 days, which, at the conservative valuation of 70 cents per day, gives a total return of $5,344.50.

Considerable experimental feeding with work horses has been conducted during the past year, this work being largely an accurate comparison of crushed *versus* whole grains for work horses.

BEEF CATTLE.

During the past fiscal year, some Shorthorn calves were purchased with a view of obtaining figures as to the production and marketing of baby beef.

DAIRY CATTLE.

The pure-bred dairy herds are Ayrshire, French-Canadian, Holstein, and Jersey. All these herds have given satisfactory returns. The total number of pure-bred cattle of the four above-mentioned breeds now amounts to 134 head.

Dairy Cattle Feeding Experiments.—A number of new phases of dairy cattle feeding experimental work have been undertaken during the year. The four lines of work given greatest prominence were: first, an investigation into the most successful succulent roughages for summer feeding, largely a comparison of ensilage *versus* soiling crops; secondly, the study of the protein values of various concentrated meals on the markets, and the amounts of meals which may be profitably fed the milch cows; thirdly, a study of the comparative values of roots of various classes for feeding of milch cows; and, fourthly, a continuation of the work of investigating the most economical methods of calf rearing, with and without whole milk, skim-milk, and other dairy by-products in conjunction with various calf meals.

Milking Machines.—Another very successful year has been completed in the investigation of the commercial values of mechanical milkers. In addition to the two original machines, namely, the Sharples and Burrell-Lawrence-Kennedy, used for this investigation, there have been added the Empire, Lister, Omega, and Calf-way milkers. Although all this work is not being accurately checked bacteriologically, yet many interesting bacteriological analyses have been made to compare these machines as to cleanliness, and also in the study of best methods of cleaning. Valuable data regarding the comparative commercial and pathological values of these machines have been gathered.

Dairy Cow Returns.—Again the quality of the dairy cattle on the Central Experimental Farm has shown marked improvement. The average profit per cow has again increased over $28.97 per annum, due largely to increased production, but also to an increased value of butter, amounting to 5 cents per pound. Particular attention is drawn to the fact that many of the best cows have not completed their lactation periods at the end of the fiscal year, hence the following table in itself is not a definite criterion in the comparison of the breeds. Following is a brief summary showing the returns of some of the cows, the profits being based on the following valuations: Butter, 35 cents per pound; skim-milk, 20 cents per hundredweight; pasture, $1 per head per month; hay, $7 per ton; meal, $25 per ton; and other roughages at the usual cost prices. Attention is drawn to the marked increase in both production and profits of the best five animals in each breed.

It should also be noted that butter valued at 35 cents per pound and skim-milk at 20 cents per hundredweight is equivalent to milk at only $1.80 per hundred pounds, while in reality the manufacture of the fancy cheeses sold in large quantities from this Farm realized $3 per hundredweight on the milk. However, the butter basis is fair for the comparison of the various breeds in these stables, as well as with the average herds throughout Canada.

Some Dairy Herd Records, Central Experimental Farm, 1916.

No. of Head.	Age.	Breed.	Average Days in Milk.	Average pounds Milk produced.	Average per cent Fat.	Average profit over Feed between Calvings (Labour, manure, and Calf not included).
	Years.		Days.	Lb.	%	$
58	2 and over.	All breeds and grades	353	9,303·2	3·91	105·86
5	2 "	Ayrshire	416	11,609·6	3·78	127·39
5	2 "	Canadian	357	7,360	4·79	104·98
4	5 "	Grade Ayrshires	384	10,173	4·10	124·78
5	4 "	Grade Holsteins	415	13,571	3·67	154·78
5	2 "	Holstein	305	14,520	3·48	152·24
5	4 "	Jersey	394	7,861·7	5·46	135·88

SHEEP.

Although the lack of pasture still is a great hindrance in the investigational work with sheep, yet this class of stock made an excellent showing during the past year, due largely to the high market values of lamb, mutton, and wool. Breeding work on a small scale with Shropshires and Leicesters has been most successful. There are now 156 head of breeding stock in the pens.

SWINE.

Considering the shortage of pasture, another very successful year is to be reported for swine husbandry on this Farm. At present there are 188 head of swine in the pens, Three breeds are maintained, namely, Yorkshires, Berkshires, and Tamworths. Many swine experts claim that there are at this Farm some of the finest breeding sows in Canada.

Several lines of investigational work in the feeding of swine have been conducted during the past year. Briefly, these are: (1) the value of tankage and other foodstuffs as milk substitutes for young pigs during and after weaning; (2) the values of soiling crops for the summer feeding of shoats in the dry lot; (3) the most economical methods of feeding, comparing the hopper grinders and self-feeders with regular hand feeding; (4) the best rations for finishing shoats for the market, and the comparative values of the protein contained in various concentrated meals for the feeding of market hogs.

BUILDING PLANS.

The Animal Husbandry Division has again, during the past fiscal year, finished the preparation of plans and brief specifications of live-stock buildings for the branch Farms. These plans have been, in turn, passed on to the Department of Public Works, and have there been used as patterns for the completed plans used in the construction of these buildings.

Many plans and specifications of farm buildings have been sent free of charge to farmers throughout Canada. These plans illustrate the various economical types of farmer's barns best suited to their needs. In all, 550 blue-prints of live-stock buildings have been made and distributed. This number is less than that of last year, which decrease is accounted for largely by the loss of our draughtsman, who enlisted. Undoubtedly, also, fewer farmers are building new or remodelling buildings in these times. Many excellent barns of various sizes and types have been constructed after these plans, to the marked satisfaction of their owners.

MISCELLANEOUS.

The Dominion Animal Husbandman, in addition to his duties at the Central Experimental Farm, has officially visited, at least once during the year, all of the branch Experimental Farms in Canada where live-stock work is being conducted. He and his assistants have also spent a great deal of time attending a large number of meetings in various parts of Canada, judging at numerous exhibitions, assisting at live-stock short courses, and studying live-stock conditions and the needs for experimental and demonstrational work relating to live stock.

DIVISION OF HORTICULTURE.

REPORT OF THE DOMINION HORTICULTURIST, W. T. MACOUN.

The work of the Division of Horticulture may be divided into six main parts, relating to pomology, vegetable gardening, ornamental gardening, plant breeding, correspondence and office work, and work in connection with the branch Farms and Stations. These naturally overlap, but they indicate the principal lines of effort.

Under pomology is included the study of varieties of fruits for the purpose of getting information in regard to yield, season, quality, and profit. There is also the identification, classification, and description of the fruits, together with their propagation, planting, and care, and also experiments in cultural methods, including spraying. The exhibition and judging of fruits may also be grouped under pomology.

Vegetable gardening includes the testing of varieties to compare different strains of the same variety, and the relative merits of different varieties in regard to yield, quality, season, etc. Cultural methods and spraying are also dealt with, and the study of commercial methods, both in the field and under glass.

Ornamental gardening has to do with the cultivation of ornamental trees, shrubs, and herbaceous plants, with the study of their different characteristics, including height, form, colouring, and season of bloom, so that information will be available to Canadians to enable them to plant their places in such a way that the trees, shrubs, and herbaceous plants will blend or be contrasted with one another to form pleasing landscape effects. The forest belts and windbreaks are also included in this part of the work.

Plant breeding in the Horticultural Division is carried on from year to year in the endeavour to improve fruits, vegetables, and ornamental plants by cross-breeding and selection, and to study the laws of inheritance in different kinds and varieties of horticultural plants.

The correspondence and other office work of the Horticultural Division is growing rapidly. Of the letters received a large proportion require technical information, and it is believed that through the correspondence much assistance is rendered. The person who asks for information by letter is the one most likely to put into practice the advice given.

Much of the time of the writer is devoted to the interests of the branch Farms and Stations, the work having grown rapidly in recent years. It is the aim to help the superintendents develop the horticultural work and so to systematize the work that the results will be made of the greatest value to the people of Canada. Material such as plants, seeds, labels, record books, and other things are furnished the branch Farms and Stations from the Central Farm.

As in previous years, the writer visited the branch Farms and Stations in 1916, and conferred with the superintendents in regard to horticultural matters.

FRUITS.

Notwithstanding the very unfavourable season for apples in the province of Ontario, the crop at the Central Experimental Farm was the best one in its history. Owing to the wet weather of May and June, there was a very serious development of apple scab on both foliage and fruit in unsprayed orchards, resulting in reducing the quantity and quality of the fruit. Trees were thoroughly sprayed on the Central Farm, and the good results from this work were very apparent.

There is now such a large proportion of really hardy varieties of apples in the orchards at Ottawa that good crops are assured on some varieties practically every

year, as the hardiest sorts are more regular bearers than those which, at Ottawa, are nearer the northern limit of their successful culture.

New Varieties of Apples Originated at Ottawa.—Reference has been made in the report from time to time to the new varieties of apples originated in the Horticultural Division. Additional varieties of great merit fruit each year, and it is difficult to decide which to retain, but there are so many places in Canada where the varieties at present on the market are either too tender or do not cover the season well, or are not good enough in quality, that a variety which might not be desirable in one place is very desirable in another, hence more are retained than would otherwise be the case. These new varieties, in addition to being tested at the Central Farm, are sent from year to year to the branch Farms and Stations, and in a few years it will be known whether they are better suited for the districts they are being tested in than are others which have heretofore been grown there. Some of the most promising varieties of these new apples are Ambo, Brock, Diana, Donald, Elmer, Joyce, Melba, Niobe, Pedro, Rocket, Rupert and Thurso.

The very great importance of having more and better varieties of hardy plums is admitted. The European, Domestica, or so-called "blue" plums are not quite hardy enough for parts of Canada as cold as at Ottawa, and while there is sometimes a crop of these, they are not reliable bearers. In the native red plum and the native American plum there are two species, however, which furnish many hardy varieties, and while most of these are not quite good enough in quality to compare favourably with the European plums, there are a few which are very desirable. The Cheney is one of these. It is one of the earliest and does well in the colder parts of Ontario and Quebec and in the Prairie Provinces. The Assiniboine is also an early variety which has done well at the Experimental Farm, Indian Head, Sask. From the native plums of Manitoba will, no doubt, be originated new varieties especially suited for conditions there. The American plums cross readily with the Japanese, and the Omaha and Emerald plums, which have been tested at Ottawa for a number of years, are very desirable varieties resulting from this cross. Some cross-breeding work with plums is done each year at Ottawa, and was continued in 1916.

The development of a hardier race of strawberries, with better-flavoured fruit, is being attempted at Ottawa by crossing the cultivated varieties with the wild species from different parts of Canada.

Fruits at the Experimental Station, Summerland, B.C.—The first orchards were planted at the Experimental Station, Summerland, B.C., in 1916, when apples, pears, plums, peaches, cherries, apricots and small fruits were set out. As irrigation is an important factor in the successful cultivation of fruits in this district an extensive series of experiments in irrigating fruit trees was begun there.

Fruits at the Experimental Station, Morden, Man., in 1916.—At the new Experimental Station, Morden, Man., there is no natural protection for fruit trees, so in 1915 caragana hedges for windbreaks were set out in the area where the first orchards were to be planted, so that these would have a start before the fruit trees were set out in 1916. In 1916, the first orchards and bush-fruit plantations were planted. About one thousand trees were set out, mainly apple trees, but a considerable number of plum trees also, and, in addition, some 27,000 seedling apple trees were planted close together in temporary rows. After these have gone through several winters it will be possible to tell which are the hardiest, and from the latter, it is hoped, will be obtained something better than is at present available for the prairies. Plantations of small fruits were also established.

Fruits at the other Branch Farms and Stations.—Good orchards have now been established at most of the branch Farms and Stations, and very useful data are being accumulated. It is in the Prairie Provinces where it is most difficult to grow tree

fruits, and the orchards there are, from time to time, bady injured by frost. It is at such times that the value of the cross-bred apples originated by the late Dr. Wm. Saunders is demonstrated. For instance, in the winter of 1915-16, apple trees of the ordinary commercial varieties which had been bearing well at the Experimental Station, Lethbridge, Alta., were killed, while certain of the cross-bred varieties remained uninjured.

VEGETABLES.

Vegetables have been given much prominence in the horticultural work of the Experimental Farms ever since they were organized. It is now possible for a settler in almost any part of Canada to learn what varieties are best suited to his district, tests having been made far north at the substations in the Peace River and Mackenzie districts, in addition to those conducted at the many Experimental Farms and Stations scattered throughout Canada. The cultural tests, which were begun in more recent years, are proving very useful also, as, in addition to knowing what to grow, it is very important to know how to grow it, and in a country as large as Canada the same method is not always suitable for each part. An interesting result was obtained at Ottawa in 1916 with garden peas. Brush was used for supporting the vines of nineteen varieties on a certain area, while a similar area was left unbrushed. There was a decidedly greater yield from the area which was unbrushed—quite a surprising result. This experiment will be continued, as the general impression is that brushing peas will ensure a larger yield, and, doubtless, it will in some seasons and some places. The importance of obtaining seed potatoes from sources where vitality of the seed is strong was again demonstrated at Ottawa in 1916, where much larger yields were obtained from seed from other parts of Canada than from Ottawa-grown seed. The value of "sprouting" potatoes before planting was again demonstrated in 1916.

Irrigation of Vegetables.—There was a very heavy precipitation during the spring of 1916, and it was not until late in July that there was any need of irrigation from the overhead irrigation system at Ottawa, but the latter part of the summer was very dry, and marked increases from irrigation were obtained in the crops of cauliflower, cabbage, celery, ripe beans, and corn.

Growing Vegetable Seed.—Experiments were continued in 1916 in the growing of different kinds of vegetable seeds in order to get more information in regard to methods of growing each kind, and the yield which could be obtained. Very good seed of beets, carrots, parsnips, celery, cabbage, onions, spinach, and lettuce was grown.

Comparison of the crops from home-grown and imported seed shows that quite as good, or better, crops can be grown from home-grown as from imported seed if the seed has been obtained from good stock plants.

Developing Early Vegetables.—Experiments are being continued in the selection and cross-breeding of different kinds of vegetables in order to obtain earlier strains. The Alacrity tomato and Early Malcolm corn are two good varieties developed at the Central Experimental Farm, which are now in the trade. Especial attention is being paid to peas, beans, tomatoes, corn, and onions.

Information to Vacant Lot Gardeners.—The Horticultural Division did much work towards the close of the fiscal year in connection with vacant lot gardening and home vegetable gardening. Two pamphlets were published to meet the demand for information, and hundreds of letters coming direct to the Division or through the information bureau were dealt with.

ORNAMENTAL GARDENING.

Although, during the war, special attention is being paid to the economic side of horticulture, the ornamental side has not been neglected. Hence, the testing of varieties of garden plants has been continued, cultural experiments are being tried, and at all the Farms and Stations the endeavour has been made to make the grounds attractive so as to try and induce farmers, especially, to do something more to beautify their homes so that there will be a greater incentive for their sons to come back to the farm when the war is over.

CEREAL DIVISION.

REPORT OF THE DOMINION CEREALIST, CHAS. E. SAUNDERS, B.A., Ph.D.

THE SEASON.

In contrast with the year 1915, the season of 1916 proved exceptionally unfavourable for cereals in many large districts. Indeed it is doubtful whether any year during the past quarter of a century was less favourable. It is true that in some parts of Canada the crops were excellent, but the areas where the crops were poor were very large. In the east, a large section of country suffered from excessive rains in April, May, and June, so that many fields which might have been sown with cereals had to be devoted to other crops; and, in some cases, where cereals were sown the young plants started under very adverse conditions, due to excessive moisture. The prolonged wet weather was followed almost immediately by intense heat, which continued almost up to harvest time, and prevented the grain from filling properly. Such conditions were, of course, particularly hard on cereal crops.

In the central and western provinces—Manitoba, Saskatchewan, and Alberta—there were districts where very large crops were produced, but the total yield of grain in these three provinces was rather low. Unusual damage was caused by rust, frost, and hail. Some fortunate areas, such as southern Alberta, for instance, escaped damage almost entirely, but the loss from rust in southern Manitoba and southern Saskatchewan was very heavy; and there were heavy losses in the northern parts of Saskatchewan and Alberta from an altogether exceptional frost which occurred about the 10th of August, injuring cereals on many of the low-lying fields over a large area of country. Hail caused unusual losses in several districts, the number of severe storms being quite abnormal.

In making comparisons between the crops of 1915 and those of 1916, it should be remembered that the former year was quite extraordinarily favourable. Any comparisons which are to be made should therefore take into account the average crop for a series of years rather than the remarkable crop of 1915.

MARQUIS WHEAT.

As usual, this extraordinary variety has again given remarkable returns. Last season, it created what is probably a world's record for the yield of spring wheat from a large field, when a farmer, in Southern Alberta, harvested 54,395 bushels from 1,000 acres of land. Such a wonderful yield would scarcely be credited were it not properly attested by trustworthy persons.

DISTRIBUTION OF SAMPLES OF SEED.

The annual free distribution of samples of seed grain has again been conducted. Some modifications were made in the manner of carrying it on, the chief of these being that printed application forms were furnished to those who wished to receive samples.

In this way, it was found possible more readily to secure the desired information as to the conditions on the farms of the applicants, the results obtained from varieties previously tested, etc. As the printed forms facilitated the making of satisfactory applications, and as the announcement of the distribution in the public press was made somewhat earlier than usual, we should doubtless have had a great increase in the number of acceptable applications even without the stimulus which was furnished by high prices and scarcity of seed. As it was, our stocks of nearly all varieties—though larger than the quantities distributed in the previous year—proved quite inadequate. The total distribution this year is more than double that of last year.

The number of samples of seed grain sent out from Ottawa to the various provinces were as follows: Prince Edward Island, 36; Nova Scotia, 312; New Brunswick, 158; Quebec, 2,850; Ontario, 1,176; Manitoba, 544; Saskatchewan, 1,107; Alberta, 1,060; British Columbia, 331. Total, 7,574.

TESTS OF VARIETIES OF CEREALS.

Although the weather at Ottawa was very unfavourable for cereals, and the annual tests were therefore carried out with unusual difficulty, nevertheless some good results were obtained. At most of the branch Experimental Farms and Stations good crops were secured and useful observations were made at all of them, except at Rosthern, Sask., where the crops were entirely destroyed by hail.

Plots of Cereals, etc., at Ottawa.—In 1916, there were sown at Ottawa, 883 very small plots of cross-bred varieties not yet fixed in character, and 498 plots (chiefly small) of new varieties and selections which are now true to type and are being increased for test on a larger scale.

The regular test plots of grain, for the study and comparison of varieties, are one-sixtieth of an acre each. The number of plots of this size, last season, was as follows: Spring wheat, 254; barley, 287; field peas, 64, and flax, 31, making a total of 636 plots, and representing about 600 varieties and selected strains.

The total number of plots of all sizes was 2,017.

New varieties.—In addition to the regular tests made every year at Ottawa, a few extraordinarily promising sorts of cereals and peas are being tried at other localities on the branch Experimental Farms. It is expected that, in the near future, at least one new variety of hulless barley and one of hulless oats and one of early ripening, hard, spring wheat will be introduced to the public. The progress made in this work is necessarily slow, as it is important to avoid the premature introduction of varieties which have not been sufficiently tested.

NEW EXPERIMENTAL FLOUR MILL.

With a view to the resumption, at as early a date as possible, of the important researches in milling and baking, a new and superior experimental flour mill has been purchased, to replace the one which was lost when the cereal building was burned a couple of years ago. The new mill is capable of grinding rapidly and satisfactorily quite small amounts of wheat, thus enabling us to make flour from varieties of which only a few pounds of seed can be spared.

DIVISION OF BOTANY.

REPORT OF THE DOMINION BOTANIST, H. T. GÜSSOW.

The administration of the plant-disease section under the Destructive Insect and Pest Act forms part of the duties of the Dominion Botanist. During the year the work in connection with the investigation into white pine blister rust was continued. In Ontario were begun control measures, such as extermination of diseased vegetation —pines and currants—and the work was placed on a systematic basis with the aim in view to prevent the spreading of this disease, the seriousness of which is now being universally recognized. In New Brunswick and Nova Scotia, we are able to report that this rust has not become established. In the province of Quebec, a careful search is now being conducted, particularly along the Maine border.

Another phase of work carried on under this Act relates to disease elimination in potatoes. Powdery scab is now quite under control. Other potato diseases are also being gradually eliminated, and it would be surprising if the systematic work now conducted according to a standard method of field and yield inspection should not result in a great improvement in the quality, purity of stock, and freedom from disease of seed potatoes, as well as in quantity of yield, since the latter has been found to be affected by the presence of disease to a far greater extent than by any other cause; in fact, this is perhaps one of the most important features of the work done with potatoes, that it has been established beyond any doubt that poor yield, formerly attributed to weak strains, to degeneration and other causes, is frequently due to the presence of diseases conveyed by the seed tuber, particularly leaf-roll and mosaic disease.

A thorough investigation of the severe grain-rust epidemic was carried on during the year. As a result, two field laboratories were established, one at Brandon and one at Indian Head, in charge of trained specialists, who will devote their time to a comprehensive study of the grain rust and related problems affecting the yield of our grain crops. During the year a coloured poster, describing the nature of grain rust, together with a popular account of this disease in bulletin form, was prepared.

In continuation of some work done during the previous year, several plots were sown with flax. As in the previous year, the samples were reported on by Mr. Lockhart, of Parkhill. Although the season was the driest on record in the province of Ontario, Mr. Lockhart pronounced these samples to be the finest flax he had yet seen grown in Canada. It is felt that as there is now a separate Division to deal with fibre plants, further work on flax may safely be left to that Division.

Several plots were also devoted to hemp, both for seed and fibre. The fibre was very favourably reported on by the Doon Twines Company, Limited, and a sample of the twine manufactured from it was sent to the Central Experimental Farm for inspection.

Several plots of soy beans, the seeds of which were obtained from the United States and France, were sown and, in both instances, the seeds ripened satisfactorily. These were analysed for oil content by the Dominion Chemist.

As castor oil is one of the most important commercial oils, the seeds of this plant were obtained from various countries of Europe and also from the United States, and sown after the danger of frost was over. A considerable quantity of ripe seeds with which to carry on work next season was obtained.

Several plots were devoted to black mustard and white mustard, these being the two chief mustards used in commerce. No difficulty was experienced in growing these two crops. Favourable reports on the quality were received from Messrs. Dunn & Co., of Hamilton, Ont.

Chicory was also experimented with. The Dominion Chicory Company, of Montreal, reported that the sample of roots submitted to them was "excellent in every way."

A considerable area was devoted to the culture of medicinal plants. Opium poppy grew well, anise and dill ripened seeds satisfactorily, belladonna survived the preceding winter, and there were also several other species under observation.

Some miscellaneous crops such as lentil, chick pea, and hyacinth bean were experimented with, and in each case some ripe seeds were obtained.

The reports from the field laboratories at St. Catharines, Fredericton, and Charlottetown indicate that the officers in charge fully realized the importance of getting in close touch with the farmers. The interpretation and demonstration of practical results, the guidance and educational propaganda conducted right on the farmer's own fields, have greatly benefited the various communities. Several interesting observations have been made which will certainly prove of great value in the immediate future. Thus, for instance, it may be remembered that spraying of potatoes has not been a very general practice in some parts of the country. It was held that spraying would eat up all profits from raising potatoes in certain localities. Our experience being the very opposite of this, it was found on investigation that there existed in such localities, very poor yields, and the profits from growing potatoes were so small indeed that additional cost of production—such as spraying—would not have been profitable. The cause of the poor yields having been determined to be due to diseases that are by no means universally recognized by the practical farmers, but which reduce the yield from year to year, efforts were then made to start with a new sound seed supply, and by spraying the crop carefully the usual benefits from spraying were once more demonstrated.

Farmers whose turnips, cabbage, or similar crops were formerly greatly depreciated in value by club root are now being shown the beneficial results from the judicious use of lime. That lime exerts an inhibiting effect on club root has been known for many years, but it was not so much the question of liming as the question of when and how to apply it, which has now been successfully demonstrated.

The free distribution of pure cultures of nodule bacteria has gained in favour, and ten times the amount of cultures formerly sent out were asked for by farmers all over the Dominion. Reports indicate clearly that good stands of alfalfa are being secured by treating seed with cultures, while, in a good many cases, untreated check plots succumbed during the first winter.

DIVISION OF BEES.

REPORT OF THE APIARIST, F. W. L. SLADEN.

The outstanding feature of the year 1916 was the unusually large crop of honey from alsike and white clover produced in Ontario, Quebec, and Manitoba, principally due to the wet spring followed by fine, warm weather when the plants were in flower. The honey was sold at a fractional advance on the prices obtained in the previous year, and was eagerly bought up by housekeepers, sugar for canning fruits being high.

PRODUCTION AT THE EXPERIMENTAL FARMS.

Bees are now being kept on fifteen of the Dominion Experimental Farms. The highest yield of honey per colony in 1916 was obtained at the Central Farm, Ottawa, where thirty-five colonies, spring count, produced 8,269 pounds, an average of 236 pounds, valued at $34 per colony. Second came Ste. Anne de la Pocatière, with 132 pound per colony; and third, Invermere, with 117 pounds per colony. The average yield

of honey in the fifteen apiaries was 61·9 pounds per colony, spring count, and the average price obtained for the honey was 15⅔ cents per pound, so that it realized $9.69 to the colony.

A summary that has been prepared of the average annual yield of honey per colony at the different Experimental Farms during the four years 1913 to 1916, inclusive, shows that Nappan gave the highest yield, amounting to 115 pounds, which came principally from alsike, white clover, and goldenrod; Ottawa came second, producing 106 pounds, principally from alsike, white clover, and sweet clover; Lethbridge, Alta. (1914 to 1916 only) third, with 86 pounds, mainly from alfalfa; and Ste. Anne de la Pocatière, Que., fourth, with 62 pounds from alsike and white clover. While the yields at the other Farms and Stations, namely, Charlottetown, P.E.I., Kentville, N.S., Fredericton, N.B., Cap Rouge, Que., Brandon, Man., Indian Head, Sask., Lacombe, Alta., Invermere, B.C., Agassiz, B.C., and Sidney, B.C., were lower for various reasons, ample evidence has been obtained that bee-keeping is profitable at each of these places.

SURVEY WORK.

During the summer of 1916 the Apiarist visited each of the Farms at which bees were kept, and made detours into promising regions in order to study their possibilities for honey production, visiting apiaries and investigating in detail the species of plants from which the honey is gathered, and the weather conditions that are most favourable for abundant production. The conclusion was reached that honey crops that will compare favourably in size and quality with those to be obtained in the best regions in North America may be secured in selected places in the Ottawa River basin, including some of the northern valleys, where raspberry, alsike, and white clover, fireweed, and certain species of goldenrod and aster form successive sources of honey. For the further investigation of this region, a co-operative experiment with bee-keepers having apiaries situated at Montcerf, Que., Lytton, Que., and Thornloe, Ont., was carried out in 1916, and is being continued.

Other promising regions visited were the district east of Winnipeg, certain rich farming and swamp lands in the Maritime Provinces, and the alfalfa districts of southern Alberta. A two days' investigation at Melfort, Sask., showed that bee-keeping is worthy of attention as a side line in this northern district. An extension of the system of co-operative experiments to these and other districts has been organized.

POLLINATION OF ALFALFA.

Further study of the wild bees believed to be instrumental in pollinating alfalfa was made by the Apiarist in the western provinces. *Megachile latimanus* Ckll. was found to be by far the most useful species tripping the flowers in southern Alberta, and *M. perihirta* Ckll. in the dry interior of British Columbia. The honey-bee visits the flowers without tripping them, and the action of bumble-bees is uncertain.

EXPERIMENT WITH BEES FROM THE SOUTH.

Two experimental shipments of bees without combs were received in the spring at the Central Experimental Farm by express from two breeders in Alabama, United States. One of them, consisting of six 1-pound packages, was fourteen days en route, and only 17 ounces of bees were found to be alive on arrival. The other shipment, consisting of three 2-pound packages, with untested queens, costing $9.75, with $2.50 express charges, arrived in good condition on May 10, after four day's journey, and, after having been assisted a little with combs and brood from other colonies, produced 435 pounds of honey, and built up into five strong colonies fit for wintering.

RESULTS FROM OUT-APIARIES.

Two colonies of bees from the Central Farm were placed on the Kazabazua Plains, Quebec, for the spring and summer. Each produced an average honey crop of 260 pounds, consisting of 66½ pounds of amber honey, principally from blueberry, 132 pounds of white honey, principally from white and alsike clover, and 61½ pounds from goldenrod.

A colony was placed in a swamp at Sully, Que., for the same period, and gave 220 pounds of honey, consisting of 34 pounds from blueberry, 132 pounds mainly from clover, and 54 pounds from goldenrod.

WINTERING EXPERIMENTS.

Twenty-eight colonies of bees were wintered in the bee cellar in the new apicultural building at the Central Experimental Farm, and investigations into the ventilation, relative humidity, and temperature of the bee cellar under different weather conditions, and their effects upon the bees were carried on throughout the winter.

Experiment with Winter Stores.—An experiment was made to compare different kinds of food consumed by bees during the winter.

One of the objects of this experiment was to discover the source or sources of the hard, granulated honey, associated with a heavy mortality of bees, that has been found in some winters in several apiaries in the Ottawa valley, including the apiary at the Central Farm in 1914-15 and 1915-16. Another object was to test the value of sugar syrup as a supplementary and also as a sole food for bees in winter.

In four colonies, wintered on stores collected between June 26 and July 18, mainly from alsike and white clover, the bees were found to cover an average of 5·1 combs per colony on April 17, the honey having granulated but little.

Three colonies on stores gathered between July 24 and August 8, largely from white sweet clover (*Melilotus alba*), covered an average of only 3·2 combs, much of the honey having granulated hard. Very significant was the condition of a colony belonging to this set that was wintered outside, this colony having occupied the north corner of one of the wintering cases. When this colony was examined on April 17 the bees covered only 2½ combs and the stores consisted of about one pound of granulated dried-up honey, the cappings having been torn open by the bees in an apparent endeavour to get liquid food. The combs thus presented the same appearance as those of the colonies that died or came through very weak in the two preceding winters.

Three colonies on stores collected after August 14, principally from goldenrod (chiefly *Solidago canadensis*) and buckwheat, covered an average of 3·8 combs, and the honey was not granulated.

Two colonies on undisturbed natural stores gathered at Ottawa throughout the season, chiefly towards its end, covered an average of 4·5 combs.

Eleven colonies on undisturbed natural stores supplemented with an average of 20 pounds sugar syrup each, covered an average of 5·1 combs. (Natural stores supplemented with sugar syrup also produced better results than natural stores alone in the two preceding winters.)

Three colonies on sugar syrup without honey covered 4·3 combs. One of these had all pollen cut out of the combs on October 25, and was found to cover 3·5 combs in spring.

Three colonies on stores gathered at Kazabazua and Sully, Que., consisting largely of honey from two species of goldenrod, *Solidago purberula* and *S. squarrosa*, covered an average of 5·2 combs.

Wintering Outside.—Wintering bees outside, four hives packed in shavings, in a case, in an enclosure sheltered from wind, without attention during the winter, con-

tinues to prove successful in Ottawa, the average results of the last four years showing that the bees so wintered did better than those wintered in the cellar.

In 1916-17 sixteen colonies were thus wintered in four cases, each containing four colonies placed back to back, with 3 inches of planer shavings between the hives and the sides and bottom of the cases and 10 inches on top. The outside entrances, two facing southeast and two northwest, were reduced during the winter to 1½ inches high by ⅜ inch wide. The colonies wintered somewhat better than those in the cellar, the average number of combs covered per colony on April 17, 1917, in the fourteen colonies wintered on natural stores supplemented with sugar syrup being 5·4 as against 5·1 combs in eleven colonies in the cellar.

Experiment with sealed covers.—The eight hives in two of the cases were covered with double oilcloth, and the ventilators in the roofs of these cases were covered with pieces of wood, diminishing ventilation and increasing humidity. The eight hives in the other two cases had their oilcloth covers replaced by bran sacks, and the ventilators in the roofs of the cases were left open, thus allowing upward ventilation and reducing humidity. Taking the fourteen colonies on regular stores supplemented with sugar syrup, the result of the comparison was as follows:—

	Average number of combs per colony on April 17.	Estimated average weight of stores remaining in hive, April 17. Lb.
Seven colonies, sealed covers	6·5	18·4
Seven colonies, upward ventilation	4·3	8·4

WAX MOTH KILLED BY COLD.

A cage containing living wax moths (*Galleria mellonella*), with larvæ, pupæ, and probably eggs, was placed in the honey house in the middle of March, 1917. On the nights of March 18 and 19 the temperature in this house fell to 9°F. Next day all seemed to have been killed by the cold, and on May 30 no sign of life could be found in the cage.

PAPER CONTAINERS FOR HONEY.

In consequence of the high price and scarcity of tin pails and other containers for honey, an experiment in designing paper containers for granulated honey was started during the winter. Promising results were obtained by pouring the honey when commencing to granulate into 2-pound bags made of white bond paper, waterproofed with paraffin wax, the bags having been previously opened out on a wooden block and placed in attractive cartons.

BEE GARDEN.

The frontage between the apiary and the roadway near the apicultural building at the Central Experimental Farm has been laid out into plots in which some of the principal honey plants of Canada are being grown in order to study the effect of soil, weather, and other conditions upon the secretion of nectar.

GENERAL NOTES.

During the year the Apiarist attended and gave addresses by request at a meeting of the Leeds County Bee-keepers' Association, Athens, Ont., July 3; the annual convention of the Bee-keepers' Association of British Columbia at Vancouver, August 17; the annual convention of the Bee-keepers' Association of the Province of Quebec at Montreal, November 15; and the annual convention of the Ontario Bee-keepers' Association at Toronto, December 8 and 9; and he contributed papers to the annual convention of the Quebec County Bee-keepers' Association and the annual convention of the Manitoba Bee-keepers' Association. A number of articles, giving results of experiment and investigations, were contributed by the Apiarist to the bee-keeping and general press.

DIVISION OF FORAGE PLANTS.

REPORT OF THE DOMINION AGROSTOLOGIST, M. O. MALTE, PH.D.

The work of the Division of Forage Plants is steadily and rather rapidly increasing, new lines of investigation being taken up every year.

VARIETY TESTS.

Variety tests are carried out chiefly with Indian corn and field roots, including mangels, swede and fall turnips, carrots, and sugar beets. Through the variety tests much valuable information is gained about the comparative value of different trade varieties for the different parts of the Dominion. This information, accumulated during a long series of years, is made available to the Canadian farmer through the Experimental Farms' publications.

As the value of the information gained from the variety tests largely depends upon the carefulness exercised in conducting them, and perhaps still more on the carefulness with which conclusions in general are drawn, the Division is endeavouring to take every precaution possible in order to be able to present to the farmers accurate data on the true value of the varieties under test. Thus, in order to climinate, as far as may be, all errors liable to result from variations in soil conditions in the experimental field, each variety is tested in duplicate plots and the average yield of the two plots taken as an indication of the yielding capacity of the variety. At the Central Experimental Farm, where the Division is favoured with assistance from the chemical laboratory, analysis is made of all varieties of field roots tested. The analytical data thus secured help materially, when combined with the yielding capacity of the varieties, in the calculation of the comparative values of varieties.

With special reference to the results obtained from the variety tests with field roots this year, it must be admitted that they decidedly indicate that the seed available commercially this year was, generally speaking, somewhat inferior to that of previous years. This is, however, a condition that must be considered as a natural consequence of the present scarcity of field-root seed, and the tendency to deterioration thus experienced will quite naturally disappear as soon as the world's supply begins to return to the normal.

BREEDING WORK.

Alfalfa.—The breeding work with alfalfa which was started in 1912 has now progressed to a point that enables the Division to promise, within a short time, several new, distinct varieties. A number of families of alfalfa secured through self-fertilization of promising individual plants, and planted last year, exhibit a remarkable degree of uniformity, thus bearing out the statement made in last year's report that "the expectations of the Division with regards to the development of distinct varieties in the real sense of the word seem to be well founded." As, however, the new varieties still showed some indications of not breeding completely true to type, further selection was made this year from within them. The selected plants were self-fertilized but, owing to the unfavourable weather conditions, only a very small quantity of seed was secured.

Red Clover.—In red clover, the breeding work has chiefly been confined to breeding, through mass-selection, of hardy strains. The results so far obtained not only show that it is practicable to develop varieties carrying hardiness as a hereditary varietal

character, but they also indicate that it may be possible to increase the lasting ability of red clover by evolution of varieties of a perennial type. Special attention has been paid to this question during the last few years.

Grasses.—Since 1911, breeding work with timothy has steadily been progressing. Through repeated self-fertilization of selected individuals within a number of timothy families, a number of new varieties are being developed. Owing, however, to the fact that the plants from which selections first were made were of unknown, and, certainly, of hybrid origin, the breeding work is progressing rather slowly.

In 1912, a number of individual plants of western rye grass were singled out for breeding work. A few of the plants thus selected were used, the following year, as mother plants for new varieties. In the selection of the mother plants special attention was paid to those characters on which early and heavy hay crops of fine quality depend. The breeding work is progressing very satisfactorily and, in fact, at a quicker rate than that with timothy. In order to explain why distinct varieties of western rye grass appear to be comparatively easy to develop, it would be necessary to study in detail the natural propagation of the multitude of wild forms which constitute what is called western rye grass. Suffice it to say, in this connection, that automatic self-pollination has been observed in several wild varieties of western rye. These observations have been made in the Edmonton district, Alberta, where a very great number of varieties grow in the greatest profusion, and may explain, in part at least, why various forms of the western rye grass are comparatively constant, and therefore rather easy to fix by breeding as distinct varieties.

Some work with red top and meadow fescue was also conducted the last year, but, as this work is still in its infancy, no particular reference need be made to it.

Field roots.—With a view of developing improved varieties of field roots, selections were made of two varieties of mangels, and one variety each of swede turnips and carrots. As, however, the process of breeding field roots is of necessity rather slow, any statement as to any indications of the probable outcome would, at the present stage of the work, be premature.

HOME-GROWN VERSUS IMPORTED SEED.

Last year, the Division reported that seed of field roots, especially mangels and turnips, had been produced most successfully, during the year, on several of the Experimental Farms and Stations. Figures were quoted to the effect that experiments in field-root seed raising had given most satisfactory results in the provinces of Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia. Results obtained this year confirm the statement that root seed growing can be made a very profitable business in the Dominion.

Of special interest to the seed-buying farmer is the question whether field-root seed, grown in Canada, is capable of producing as valuable crops as imported seed. Up to the present, practically all the field-root seed used in the Dominion has been imported from European countries, and it is a rather widespread supposition that the European seed is superior to that raised this side of the Atlantic. It is often heard that the climate in the seed-raising countries in Europe is especially favourable to the production of high-class seed, and that, for this reason, Canada would not be able to compete with Europe as a root-seed-producing country.

In order to ascertain the truth of such assertions, *i.e.*, in order to ascertain the crop-producing ability of Canadian-grown seed in comparison with foreign-grown seed, a number of experiments were conducted by the Division of Forage Plants this year. Canadian-grown seed of a number of varieties of field roots was tested, side by side with the best commercial seed of the same varieties, at many of the Experimental Farms and Stations, and also on many private farms in Eastern Canada. Of special interest is the outcome of the experiments with Canadian-grown seed of Mammoth Long Red mangel, tested in comparison with commercial, imported seed.

The Canadian-grown seed used in these experiments was raised at the Central Experimental Farm, Ottawa, from roots taken from the ordinary farm crop, practically without any selection at all. It was tested in comparison with commercial seed of the same variety. The crop realized from the Ottawa-grown seed was, on an average, over 10 per cent higher than the crop produced by the commercial seed.

Similar results were obtained in experiments with other varieties of mangels, and also with swede turnips, and under the circumstances the Division is in a position to report that Canadian-grown seed of varieties of field roots has proven, on the whole, superior to imported seed of the same varieties.

FORAGE CROP EXPERIMENTS IN THE YUKON TERRITORY.

In order to investigate the agricultural possibilities in the Yukon, especially in regard to production of forage crops, the Dominion Agrostologist was authorized to visit the Dawson district for about two weeks. The visit was prompted by the desire of the department to reduce, if possible, the extraordinarily high prices that must be paid for forage in the Yukon as long as it has to be imported from the outside. If it were possible to raise locally what feed is needed in the territory, many farm products would be available at vastly reduced prices. The successful growing of hay and fodder in general would also tend to lower the price for horse labour considerably.

At present the question of securing hay, for horse feed especially, is of primary importance. A certain quantity of wild hay is used for the purpose, but relying on wild hay is rather unsatisfactory. In the first place, it is not easily available in sufficient quantities and, furthermore, it is not, as a rule, rich enough for hard-working animals. Of special importance is therefore the question whether tame hay, such as timothy, western rye, clover, alfalfa, etc., can be grown successfully in the Yukon.

During the visit of the Dominion Agrostologist to Dawson, arrangements were made to start experiments with various forage plants immediately. It is most fortunate that the Experimental Farms in this work can count on the most whole-hearted and generous assistance from Yukon farmers. In this connection should be mentioned, especially, the name of Mr. J. W. Boyle, manager of the Canadian Klondike Mining Company, whose much-appreciated generosity permits us to start experiments on two locations in the Klondike valley at practically no expense to the department.

POULTRY DIVISION.

REPORT OF THE DOMINION POULTRY HUSBANDMAN, F. C. ELFORD.

The year 1916-17 has been most unusual both as regards production and marketing.

The spring of 1916 was late and conditions unfavourable for production, the early part of the summer cold and wet, the latter part hot and dry.

These conditions were anything but satisfactory for growing chickens. The late spring meant late hatches, the wet, cold weather in the early summer resulted in a heavy mortality, and the hot, dry period following materially retarded the growth of the pullets. When winter came, pullets, instead of being mature and ready to lay, did not commence laying until late in the winter or even towards the spring. Naturally this lessened the egg supply.

The high price of feed also had an influence on the available supply of eggs. The feed required for the chicks during the summer was unusually expensive, which no doubt militated against their growth. Because of the price of feed, many of the laying stock were sold in the fall, which again cut down the possible egg supply and for the same reason, the layers that were retained were not, in some cases, fed as well as they should have been.

Taking, therefore, the backward spring and unfavourable summer combined with the high prices paid for feed, the result was that early winter eggs were extremely scarce, and the sale of layers in the fall, and the continued scarcity of feed meant that even later eggs were not as plentiful as usual. This will also explain the reason, from the producer's standpoint, why eggs were higher in price during the winter of 1916-17 than they have ever been in the history of Canada.

The high prices that prevailed for all foodstuffs naturally raised the price of eggs. Coupled with this was the export of eggs to Great Britain in 1915, which depleted Canada's supply for local demand. To provide for the shortage that existed, eggs were imported early in 1916 from the United States.

During the spring months of 1916 a few eggs were exported to Great Britain, but in the fall a considerable number were sent over, which left the Canadian warehouses comparatively bare, and the supply less than is usually the case. This, combined with the production difficulties and the fact that Canadians were eating more eggs than usual, made the egg more or less of a luxury during the winter of 1916-17.

FEEDS AND FEEDING.

Special attention has been given to experiments on the cost of feeds, cost of production, incubation, brooding, diseases, etc. Experiments along these lines have been conducted at the Central Farm plant and also, to a limited extent, at the various branch Farms.

The exceptional price of all feeds caused many to sell laying stock that should have been retained. For though the cost of production was considerably higher this year than last the product (eggs) was also higher.

To show that the price of feed is not the only factor to be considered the following table is given:—

TABLE showing greater profits over cost of feed for winter 1916-17 in comparison with the same pen in 1915-16

Year.	No. of eggs laid.	Average price per doz.	Total value of eggs.	Value of feed consumed.	Profit per pen. Labor not considered.	Profit per hen.	Cost to produce 1 doz. eggs.	Average profit on 1 doz. eggs.
		cts.	$ cts.	$ cts.	$ cts.	$ cts.	cts.	cts.
1915-16.....	4,766	39·6	157 33	58 42	98 91	0 99	15·0	24·6
1916-17.....	4,806	55·2	221 17	82 49	138 68	1 67	20·6	34·6

There was an average increase of 56·1 per cent in the price of the scratch feed for the six winter months of 1916-17, and an average increase of 36·8 per cent in the price of mash and an increase of 33·3 per cent in the price of green bone during the same period, but there was an average increase of 75 per cent in the price of eggs, leaving a substantial margin of profit.

It might also be noted here that at the end of April the Toronto quotations for feed were 54·1 per cent higher than the previous year, and eggs 66·6 per cent higher that at the same time in 1915-16.

The age of the layers is a vital factor in the cost of production, as the following table shows. This table gives a summary of average results at several Experimental

Farms for the past three winters from records of many pens of pullets, yearlings, two-year-olds, and over:—

Age.	Number of birds.	Average weight per doz.	Average price per doz.	Total value of eggs.	Cost of 1 doz. eggs.
		ozs.	cts.	$ cts.	cts.
Early pullets	292	23·2	43·2	451 73	18·3
Late pullets	152	22·7	43·1	221 88	56
Yearling hens	161	24·7	47	176 48	78·2
Two years old and over	79	24·2	44	13 94	$5.73

It would appear from the above that there is considerable loss from late pullets the first winter, and from hens during their second-winter laying, though these prove profitable sometimes. It may be well to point out that some of the above records were obtained during December, January, and February only, a season of low production for hens, and that a number of hens on the Farms system are kept over their profitable period for special breeding purposes, and the egg yield from these would enter into and adversely influence the average.

For winter egg production the early hatched pullet is the most profitable, the yearling seldom as profitable, the late pullet and two-year-old and older hen a loss with but few exceptions.

ALTERATIONS TO CENTRAL FARM PLANT

During the year the central plant has been rearranged to make it more convenient for visitors to see the plant and stock without the danger of having the gates left open and experiments interfered with. A new entrance has been made from the front of the plant connected with a driveway which runs from one end of the plant to the other. This driveway enters at the back of the feed house and runs south parallel with Maple avenue until it reaches the horticultural ground, when it then turns on to Maple avenue. That part of the plant between these drives and Maple avenue is now divided into five yards, which are kept mowed the same as the lawn, and are used for rearing chicks.

The turkey plant has been fenced and two subways placed beneath the sidewalk. These subways connect the original plant with a portion of the forest belt that borders the north side of the Farm.

In order to assist in the turkey experiments, a small, rough farm of 30 acres was rented, upon which the range turkeys were reared. The young turkeys were placed there when out of the incubators, and left there until almost ready to market in the fall.

Houses.—A hot-water-pipe brooder house has been erected and is in use for the early spring chicks. This house was much needed for the early hatches, and, so far, is proving quite satisfactory.

Unfortunately, the waterfowl house on the duck plant was burned in the fall, which necessitated the transferring of the ducks and geese to the upper plant for the winter.

BRANCH FARMS.

The work at those branch Farms upon which poultry is kept has been made more efficient by the completion of most of the buildings and equipment, and the installing of a fuller stock of birds.

STUDY OF DISEASES OF POULTRY.

Through the courtesy of Dr. Torrance, Veterinary Director General, Dr. A. B. Wickware, Assistant Biologist, has been assigned to poultry work. This makes it possible to carry on investigation in poultry diseases that up to this time was not possible.

EXTENSION WORK.

Even more than usual has been the demand this year for poultry lectures, judges, etc. Requests for such have been complied with whenever possible.

The survey work, started over a year ago, is proving of much benefit. It has been the means of improving, to no small extent, poultry conditions in the sections where the work has been conducted. New houses, improved stock, more sanitary conditions, and keener interest all through are apparent. During the year a second block of farmers in the province of Quebec has been selected. This block is in the vicinity of Ste. Anne de la Pocatière Experimental Station. Similar work to that which is carried on at Cap Rouge is being conducted there.

Through the Illustration Stations Division, eggs have been distributed to the farmers operating these farms. The Experimental Farms or Stations in the three provinces, where this illustration work is being conducted, supplied to each of the farms two settings of Barred Rock or White Wyandotte eggs. From these eggs very satisfactory reports have been received.

During the winter and spring there has been a heavier demand for poultry information, through correspondence and through visitors, than has been the case up to the present. This demand comes from all classes, both farmers and townspeople.

TOBACCO DIVISION.

REPORT OF THE TOBACCO HUSBANDMAN, F. CHARLAN.

The tobacco crop of Canada in 1916 gave one of the poorest harvests in this country for many years.

Speaking generally, the season was colder than that of 1915, which itself was regarded as a very unfavourable one.

The chief drawback in 1916 was the almost continual rainfall which, especially in Quebec, took place at the time of transplanting, and rendered impossible, in many cases, the proper preparation of the soil. This forced a number of growers to abandon, in whole or in part, their tobacco crop, although their operations in the seed-beds had been successful. As a rule, the heavy lands of the province of Quebec only produced about half a crop of tobacco.

In Ontario the situation was a little better, especially in the case of the bright flue-cured tobacco, the production of which rose to about a million pounds. This represents the largest harvest of bright tobacco ever obtained in Canada. While the production of bright tobacco increased considerably, that of white Burley decreased to about two million pounds, much below the average, which for some years has been between five and seven million pounds per annum.

The prices paid the growers in 1916 were relatively high, both for the Burleys in Ontario and for the Seed Leafs in Quebec. The exhaustion of tobacco stocks in the United States and resulting increases of prices in the American markets affected Canadian prices as well.

From the economic point of view, the small tobacco harvest of 1916 may have had advantageous results for Canadian growers, since the demand for native tobaccos, especially on the part of those who handle cigar tobaccos (binders and wrappers),

was very active. This would indicate, to a certain extent, that an increasing number of Canadian manufacturers are endeavouring to use the native products in the place of those tobaccos formerly procured in other countries. When this habit has once been formed, and when the taste of the consumer has become accustomed to our native-grown tobacco, it should find on the Canadian market a regular demand. This is of special interest in the case of the Canadian fillers which, so far, have not been accepted freely by our manufacturers.

CENTRAL EXPERIMENTAL FARM, OTTAWA.

Plantation.—Plantation operations on the Central Experimental Farm were finished in good time (about the 5th of June), but growth was very slow during the whole month. Most of the varieties tested did not reach their normal development. The tobacco was slower than usual in reaching maturity, having been kept back by the cold and wet period during the first half of September. However, a liberal supply of seed was obtained, of which most was distributed in the course of the past winter.

Special attention was devoted to the growing of certain tobaccos recently imported from the Philippine islands, as they may prove suitable for fillers. The first Canadian generation of one of these tobaccos, the "Espada," seems to have become acclimatized fairly well.

Fermentation.—This work was considerably reduced on account of the small quantity of tobacco delivered from the Experimental Station at Farnham, and especially on account of the feeble development of the leaves, which allowed us to mark only four cases of tobacco as of sufficient length to be classed as binders. These, with two cases of fillers, were subjected to forced fermentation in a hot, damp room. All other tobaccos were fermented together in one single bulk.

The latter was re-bulked twice. That in the centre of the pile, therefore, received three active fermentations. No damage was noticed, but a certain quantity of mucor developed on the driest leaves in spite of the fact that they were placed in the centre of the bulk.

EXPERIMENTAL STATION, ST. JACQUES L'ACHIGAN, QUE.

The seed-beds at St. Jacques l'Achigan were particularly successful, but a number of the plants were lost, as they could not be planted out when they were ready. The transplantation was postponed until the 15th of June and was then done by hand on account of the impossibility of getting on the land with machines. After an interval planting was again undertaken by machines and finished June 30, about fifteen days later than usual.

Experience has shown that, in a season like 1916, it is better, after a certain date, the 15th of June for example, to plant, no matter how unfavourable conditions may be, rather than wait longer. The best tobacco grown at St. Jacques was planted by hand when the land was too wet to use the planting machine. After planting, cultivation was a difficult matter, but a crop almost up to the average was obtained. A number of neighbouring tobacco growers, who waited until the beginning of July to plant, harvested only a very immature and poorly developed crop.

EXPERIMENTAL STATION, FARNHAM, QUE.

The tobacco plantation at Farnham suffered considerably from wet weather. The planting was late, first because the seedlings were not as good as usual, but especially because it had been impossible to get the land into good shape. The land remained wet all season, and it was impossible to get the tobacco as mature as usual before harvesting.

Some binder tobacco was fairly successful, but the Marylands, and especially the Warne, a variety of bright tobacco which should be flue cured, were a complete failure. After the results from Warne in 1916 and those of preceding years, which were very unsatisfactory, it would seem clear that it is useless to attempt to grow this type of tobacco in the province of Quebec.

The curing process proceeded normally, without damage from fermentation.

EXPERIMENTAL STATION, HARROW, ONT.

In spite of the unfavourable conditions, the crop of White Burley at Harrow in 1916 was about normal, the colour being a little darker than usual. No definite results were obtained from the experimental work with fertilizers applied to White Burley. Better results were obtained in experimental work on the different plots of bright tobacco of the Virginia type.

On the whole, the tobacco root-rot caused less damage in Ontario in 1916 than in the present year. However, a larger number of cases of "mosaic" disease were reported. A considerable number of varieties of the Yellow Virginia type were tried at Harrow in 1915. Up to the present, the Warne has proved itself best adapted to the district, but, it may yet be found that, in a normal season, some other variety, especially if grown from Canadian seed, will prove superior for special uses.

The White Burleys grown in Ontario fall into two large classes—the Broad Leaf and the Stand-up Burley. Each of these classes comprises several varieties. Although the Stand-up Burley, on account of its earliness, furnishes a greater proportion of well-coloured leaves, most growers continue to prefer the Broad Leaf on account of its greater weight of crop.

STUDY OF TOBACCO SOILS.

This work began in 1916, and is making good progress. Some fifty samples of soils, mostly from Ontario, were collected. The analysis of these soils has been completed. From this work it is expected that it will be possible to make a rational classification of the tobacco soils of Canada. The question, however, is not a simple one, on account of the intermingling of various types of soil, often within a very limited area. In many cases, several types are found on the one farm, which makes it necessary for the Canadian grower to have a much more complete knowledge of tobacco soils than would be the case were the soil of a certain district almost uniform in character.

In certain cases, especially in the soils of Quebec, it has been possible to make close comparison between their physical composition and that of some well-known tobacco soils in the United States. It will be interesting to note the influence of the climate on the crop growing on these soils as compared with the different types of tobacco obtained in the United States on soils almost similar. It has been noted that filler tobaccos (Zimmer Spanish and Aurora) gave products of finer texture than those of similar tobacco grown in Ohio. Unfortunately, however, it is by no means certain that one can find in Canada very large areas of soil comparing with those on which binder tobaccos are produced in the United States.

The difference of texture noted between Canadian tobacco and similar varieties grown in Connecticut and Ohio will probably lead our tobacco manufacturers to adopt processes of fermentation somewhat different from those which obtain in the United States. At the present time good progress has been made in the study of this question.

INSPECTION WORK.

In the course of inspection work in Ontario in 1916, the officer in charge of that work visited about one thousand tobacco growers, and discussed with them the various tobacco problems met with. A record was also made of the area devoted to tobacco. The Tobacco Division was thus enabled to make a very close computation of the production of tobacco in Ontario.

DISEASES OF TOBACCO, SELECTION, STUDY OF VARIETIES, ETC.

This work is carried on by Mr. G. C. Routt. A considerable quantity of material has been collected, and preliminary conclusions have already been drawn from the study of certain "sick" soils in Ontario, made in collaboration with Mr. Freeman. These conclusions will be tested as the work is extended over larger territories.

It seems certain that tobacco root-rot was especially prevalent on clayey soils in 1916. This confirms observations made in Connecticut in 1915. The season there had been wet, and while the lighter sandy soils absorbed the water readily, the heavier land became caked and impervious to moisture. The air supply of the tobacco roots was partly cut off favouring attacks of root-rot. This indicates the necessity of frequent cultivation in wet seasons, to keep the soil open and well aerated.

Although in many sickly tobacco plants examined the trouble did not appear to be caused by root-rot, it seemed only necessary to examine a plant, even of healthy appearance, to discover the bacteria of *Thielavia basicola*. This would seem to indicate its wide spread and the necessity of keeping the resisting powers of the tobacco plant as high as possible. As preventive measures, in addition to the disinfection of the seed beds, drainage, deep ploughing and frequent cultivation are recommended.

As to selection work and study of varieties of tobacco (the latter including cross-breeding and general research work), it may be said that, in North America at least, this line of investigation has only begun. Under Canadian climatic conditions, one cannot expect from an imported variety the same product which it furnished in its native country. In the process of acclimatization, its character changes, either for the better or the worse. It is necessary, therefore, to fix certain types at the point where they are best suited to Canadian market demands, and, afterward, to endeavour to keep them at this point.

DIVISION OF ECONOMIC FIBRE PRODUCTION.

REPORT OF G. G. BRAMHILL, OFFICER-IN-CHARGE.

During the past year a new division was organized in connection with the Experimental Farms Branch, known as the Division of Economic Fibre Production. This division has to do with the investigation of economic fibre plants in Canada, but more especially was established to study the problems connected with flax-fibre production.

At one time the growing of flax was an industry of considerable importance in western Canada, almost every little village having its flax mill. Owing to the scarcity and high price of labour, which was not compensated for by the introduction of labour-saving machinery, flax fibre could not be produced in Canada to compete with that imported from Russia. As a result, the industry declined until, in 1914, there were less than 2,000 acres devoted to this crop. The cutting off of European supplies has changed the whole situation, and flax for fibre once more looms up as an important crop in Canadian agricultural development.

There has been established on the Central Farm at Ottawa a small, but complete, experimental flax mill. It is equipped with the most up-to-date machinery available in the flax trade, and every facility provided for a thorough study of flax retting and manipulation. The practical work is being carried out by a Belgian who has had more than twenty years' experience in flax growing, retting, and manufacturing in the famous Courtrai region of Belgium.

Experiments are under way to determine what areas in Canada are suitable to flax-fibre culture; what fertilizers can be economically applied to flax; the extent to which flax reduces the fertility of the soil; what amount of seed to sow per acre; the proper stage to harvest flax; what varieties give best results; and the efficiency and

practicability of water-retting as compared with dew retting, under Canadian conditions. Details of the experiments are not available for this report, but it is hoped the results will be ready for publication another year.

In the meantime, a considerable effort is being made to foster flax growing in those sections of Canada where the industry is already established. Meetings have been held in flax-producing centres to impress farmers with the importance of increasing the flax acreage. Owners of flax mills have been called together in convention, and ideas exchanged as to how the quality of Canadian flax may be improved. Special inducement has been given to the development of flax-pulling machinery, and every reasonable means employed to encourage the production of flax in Canada.

Attention has also been given to the possibility of utilizing the fibre from the waste flax straw of the prairies. A number of uses have been found for this material, but none has been tested out on a commercial scale in Canada. The transportation costs involved in gathering a sufficient quantity of flax straw together at one point to warrant the establishment of paper or fibre-board mills is one of the greatest difficulties connected with a solution of this problem.

The culture of hemp for fibre has also been taken up. To what extent hemp can be economically grown in Canada has not been established, but that an excellent quality of hemp fibre can be grown in many sections has been demonstrated. The experiments in connection with this plant are being watched with interest.

DIVISION OF ILLUSTRATION STATIONS.

REPORT OF JOHN FIXTER, SUPERVISOR.

This being the second season during which the Illustration Stations have been in operation in the provinces of Alberta and Saskatchewan, results of the work carried on are now noticeable, particularly in the production of good seed. A few notes are given on the work at each Station during 1916.

ILLUSTRATION STATIONS IN SASKATCHEWAN.

Assiniboia.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Percy J. H. Warren, and is situated in the southeast quarter of section 24, township 8, range 1, west of the 3rd meridian, half a mile from the town of Assiniboia, Sask.

Owing to the heavy snowfall of the winter of 1915-16, and the frequent showers in the spring, work on the land was delayed until late in April. The seed, however, was sown the first week in May, and made a very rapid, strong growth until about August 1, when rust set in and lessened both quality and quantity about 35 per cent. It is, however, gratifying to note that the well-selected seed, which had a good strong germ and was sown on well-prepared land, withstood the rust much better than many grain fields sown with ordinary seed and with ordinary cultivation. In fact, many of the latter were scarcely worth cutting.

Corn sown in June on this Station was destroyed by gophers, and was ploughed under. Western rye grass, sown June 15, made a uniform growth but, it being the first season, no crop was harvested.

Alfalfa, sown June 15, made a rather uneven growth on account of heavy rains which washed some of the plants out, necessitating the re-seeding of the spaces.

Biggar.—The farm at this point on which the illustration fields are located is owned and operated by Dr. S. E. Shaw, and is situated in the southeast quarter of section 32, township 35, range 14, west of the 3rd meridian, at the junction of two well-travelled roads, and facing the Grand Trunk railway.

The area selected in the autumn of 1915 had grown different kinds of crops. In order to have uniformity, all of the area was summer-fallowed in 1916, to be cropped as directed in 1917.

The cost per acre for summer-fallowing was $4.70.

Cabri.—The farm at this point on which the illustration fields are located is owned and operated by Mr. F. W. Abraham, and is situated in the northeast quarter of section 19, township 19, range 18, west of the 3rd meridian, one mile from the town of Cabri, Sask.

The land on this station was perfectly prepared.

The grain crops, being sown in good condition, made splendid growth up to August 17, when a hail-storm did considerable damage. However, they recovered considerably from this shock but were visited by a second hail-storm, causing altogether a loss of about 75 per cent. While great damage was done to each of the rotations, it is quite noticeable that the fields which received an extra amount of cultivation show increased yields per acre.

Forage crops on this farm have done excellently. Mr. Abraham was much interested in the production of pure seed, and harvested 1,519 pounds of clean seed from 2 acres of western rye grass, the fodder from which was readily eaten by the live stock. Corn made a good growth and, had the season been favourable, some of it would have ripened. Alfalfa also made an excellent growth. The first crop was harvested for fodder; the second was left for seed but, owing to the unfavourable weather, no seed was harvested, but there was a good crop of fodder.

All the seed grown on this Station which could be spared in the autumn of 1915 was sold for seed.

Herbert.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Milton Holmes, and is situated in the northwest quarter of section 18, township 17, range 9, west of the 3rd meridian, bordering a well-travelled road, and one-half mile west of Herbert, Sask.

The soil on the different rotation fields was thoroughly prepared before seeding.

Wheat sown in April and oats sown in May made a very strong, uniform growth up to about August 10, when rust appeared and damaged the crop fully 20 per cent. Frost on the night of August 10 did considerable damage, as well, to the quality and quantity of the grain crop. Hail also struck this section again on August 18 and did about 15 per cent damage.

Corn sown in May made a very poor, weak growth, and was not harvested.

Alfalfa and western rye grass gave good yields. The fodder was well cured, and eaten quite readily by horses and cattle.

The grain grown on the illustration fields was thoroughly screened and, the germinating power being high, it was sold for seed, eleven farmers in the district purchasing.

Kindersley.—The farm at this point on which the illustration fields are located is owned by the Ottawa Farm Development Company, and is operated by Halpenny Bros. for the company. It is situated in the northwest quarter of section 9, township 26, range 22, west of the 3rd meridian, adjoining a public road and quite close to the proposed Canadian Northern station.

The soil on this station is a heavy clay loam. Owing to the late spring, and on account of wet and cold weather, the grain was not sown until May. However, a good seed-bed was made and the wheat and oats made a very strong, uniform growth, until August 10, when a heavy frost struck this section. Rust also appeared about August 1, and continued until harvest. It is estimated that fully 75 per cent damage was done to the crop.

Alfalfa sown in 1915 gave a very heavy crop of excellent fodder.

Western rye grass was one of the heaviest crops seen in Saskatchewan. Had it been weighed it would not have been much short of 4 tons per acre.

Corn did not do well on account of the late, cold spring. It was badly frosted.

The wheat on this farm up to the time of being cut by frost and hail promised at least 50 bushels per acre, and the oats 100 bushels per acre.

Lloydminster.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Hugh Hill, and is situated in the southwest quarter of section 11, township 50, range 28, west of the 3rd meridian, one-half of a mile north of the town.

The area selected on this farm had been cropped several years, and was summer-fallowed in 1915. The grain was sown on a well-prepared seed bed and made a good, uniform growth up to August 10, when a heavy frost struck this section. Rust also appeared and continued until harvest. The grain crop was injured fully 75 per cent, making the grain useless for seed purposes. Fresh seed grain will be supplied this station.

Alfalfa and western rye grass sown in June made an excellent, strong growth before winter set in.

Maple Creek.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Geo. Hammond, and is situated in the southwest quarter of section 12, township 11, range 26, west of the 3rd meridian, one mile east of the town of Maple Creek, Sask.

The area selected for this station is a sandy loam, and, having been cropped several seasons, the rotations were all started in 1915 and crops harvested in 1916.

Wheat and oats were both sown about April 15, and made fairly uniform growth until harvested. There was, however, considerable difference in the yields per acre. Wheat grown after wheat yielded 31 bushels per acre, costing 37.3 cents per bushel; and wheat grown after summer fallow yielded 42 bushels per acre, costing 42¼ cents per bushel. Oats yielded 84 bushels per acre, which cost 20.3 cents per bushel to produce.

Corn, sown in June, made a rapid growth to a height of from 5 to 6 feet.

Alfalfa, harvested in July and October, gave two good crops, and seed was harvested from the second crop.

Western rye grass was harvested and gave 2½ tons per acre. It was well cured for fodder and winter feeding.

The wheat and oats grown on this station were shown at some of the leading grain shows, and were prize winners in all cases.

Moosejaw.—The farm at this point on which the illustration fields are located is owned and operated by Mr. John Glassford, and is situated in the southeast quarter of section 12, township 17, range 27, west of the 2nd meridian, 2 miles west of the town of Moosejaw, and borders a well-travelled road, and can be seen from the railway.

The area selected at this station had been cropped several years previous to starting the illustration work, but, unfortunately, wild oats had a very strong hold on the land. The rotation commenced on this farm was the same as on the others, but has now to be changed in order to eradicate the wild oats. It is intended to cultivate one of the fields thoroughly until August 10, then plough from 7 to 8 inches deep, pack, and sow to fall rye, at the rate of 1½ bushels per acre, allow the rye to ripen the following season and harvest for grain crop.

As soon as the above crop is removed, the land is to be cultivated thoroughly until the last week in August, then ploughed and packed thoroughly and again sown to fall rye, at the rate of 1 bushel per acre. Should any trace of wild oats be found then it will be summer-fallowed the third season.

A second field, summer-fallowed in 1916, is to be sown with oats and harvested early for fodder, then cultivated the balance of the season. If wild oats should still appear, a second crop of fodder will be taken off and the land summer fallowed the third season.

Corn on this station has done exceptionally well, giving a large quantity of choice fodder for winter feeding. Alfalfa and rye grass sown in June made a very strong, uniform growth before winter set in.

Pambrum.—The farm at this point on which the illustration fields are located is owned and operated by Mr. C. W. Appelgren, and is situated in the north half of section 21, township 11, range 11, west of the 3rd meridian, a half mile south of the town of Pambrum.

The area selected for illustration purposes, with the exception of field "A," was summer-fallowed in 1915. The fallow was perfectly worked and put in good condition for sowing in 1916. The spring opened fairly early and, the land being perfectly prepared, the grain was sown on a good seed-bed. Wheat and oats made a rapid, uniform growth, but were struck hard by rust, which caused about 40 per cent damage. Frost also injured both quality and quantity. A noticeable feature on this station is that wheat grown continuously yielded only 18 bushels per acre, while that grown after summer-fallow gave a yield of 36 bushels, just double the quantity. Oats also gave a good yield. Both wheat and oats made choice seed, and a considerable part was sold for that purpose. Corn sown in June did well, and gave a heavy crop of fodder.

Alfalfa and western rye grass, sown June 9, made a very strong, uniform growth, were clipped and left as a mulch, a good strong growth being left as a protection over winter.

Prelate.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Wm. Huxtable, and is situated in the southwest quarter of section 15, township 22, range 25, west of the 3rd meridian, one mile north of the town of Prelate.

The area selected for this station was practically new land, being a good, strong, chocolate loam, rather heavy in character. The land was all summer-fallowed in 1914 and in good condition for starting the rotations in 1915. This being the second year, the rotations show a remarkable difference in the yields.

Wheat after wheat gave a yield of 20 bushels per acre, costing 49 cents per bushel, while wheat after summer-fallow yielded 40 bushels per acre, costing 38½ cents per bushel, which charge includes the previous summer-fallow, rent and machinery. The 20 bushels per acre costing 49 cents per bushel would amount to $9.80. If sold at $1.50 per bushel the amount would be $30, leaving a balance of $20.20. The 40 bushels per acre costing about 39½ cents per bushel, if sold at $1.50 per bushel, would amount to $60, leaving a balance of $44.60. It is here shown that it pays to summer-fallow, and the land is kept much freer from weeds by so doing.

Alfalfa and western rye grass gave good crops of excellent fodder.

Radville.—The farm at this point on which the illustration fields are located is situated in the southeast quarter of section 18, township 6, range 17, west of the 2nd meridian, bordering the main highway and adjoining the town of Radville.

The area selected on this farm is located on what is known as the burned-out lands. As part was cropped in 1915, it had to be summer-fallowed in 1916 in order to arrange the rotations for 1917. The soil on this station is rather uneven on account of large holes where the humus has disappeared. Several seasons must elapse before this land is uniform, unless a great deal of time and labour is spent levelling and cultivating.

Wheat and oats sown in April made a medium growth and promised to yield fair crops up to July 25, when rust set in until harvest. Hail also visited this station on

August 11, doing about 50 per cent damage. The grain on this farm also appeared to withstand the rust and storms, on account of the stronger growth, more than many fields in the neighbourhood, and at threshing time farmers purchased for seed purposes all that was left after the operator had saved enough for his own seed.

Shaunavon.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Neil McLean, and is situated in the northeast quarter of section 18, township 8, range 18, west of the 3rd meridian, adjoining the town of Shaunavon.

The season of 1916 opened fairly early, the land being thoroughly prepared.

Wheat sown in April and oats early in May both made a very rapid, strong growth until the night of August 10, when 4 degrees of frost occurred in the district, doing a great deal of damage, both to quality and quantity of all grain crops.

The wheat on this station stood from 3½ to 4 feet high and promised from 40 to 50 bushels per acre. The oats stood 4 feet high and promised at least 100 bushels per acre. It is gratifying to note that the injury was not as great on the station fields as on those in the district. The selected grain sown on well-prepared soil appeared to ripen more uniformly and to be nearer maturity when the frost came.

Corn also made a satisfactory growth, but was cut down completely by the frost.

Alfalfa and western rye grass, sown in June, made a very strong, uniform growth and were in excellent condition when winter set in. This being the first season, no crop was harvested.

Weyburn.—The farm at this point on which the illustration fields are located is owned by Mr. E. Meredith, and is situated in the southeast quarter of section 6, township 9, range 14, west of the 2nd meridian, 3 miles north of the town on the junction of two well-travelled roads.

The area chosen on this farm had been cropped several seasons, and was summer fallowed in 1915. Owing to the great depth of snow during the winter of 1915-16 and the heavy rainfall in the spring of 1916, the land could not be worked as early as desirable. However, a good seed bed was prepared and the seed well sown early in May. Fine growing weather set in, and a very strong, uniform growth was made. The wheat crop promised 40 to 50 bushels per acre, and the oats at least 100 bushels per acre. Unfortunately, rust appeared in this section about July 25, and frost August 10, lessening the yields from 40 to 50 per cent, and injuring the quality for seed purposes.

Corn and roots on this farm did exceptionally well.

Western rye grass sown the last of May, and alfalfa sown in June made very strong, uniform growth, and promise to give big yields.

Mangels were also sown, and gave a very heavy crop of choice roots for winter feeding.

ILLUSTRATION STATIONS IN ALBERTA.

Bow Island.—The farm at this point on which the illustration fields are located is owned and operated by Mr. M. Mortensen, and is situated in the northeast quarter of section 2, township 10, range 11, west of the 4th meridian. It is about four and a half miles south of the town, and borders the main road.

The land for the different rotations on this station was well prepared, and the seed sown early in April. Growing conditions were as good as could be desired. Both wheat and oats made a rapid, strong growth until harvested. One noticeable feature in the rotations is on the field sown to wheat continuously, which gave a yield of 27 bushels per acre, costing 41 cents per bushel, while wheat grown after summer-fallow yielded 48 bushels per acre, costing 36 cents. Oats yielded 89 bushels per acre, and the cost of production per bushel was 18 cents.

Corn sown in May grew to a height of 5 feet, but no cobs formed.

Alfalfa and western rye grass, sown in June, made a uniform growth, were clipped and left on the land as a mulch.

Carmangay.—The farm at this point on which the illustration fields are located is owned and operated by Mr. J. A. Neilson, and is situated in the southwest quarter of section 14, range 23, township 14, west of the 4th meridian, 2 miles east of the town of Carmangay.

The area chosen at this station is a sandy soil, and has been cropped several seasons.

The field of wheat sown continuously shows a marked decrease over the summer-fallow field, yielding less than half. It may be advisable to change this rotation for two reasons, on account of weeds increasing and because of the decrease in yields.

Oats made a medium growth. There was a slight attack of rust, about 2 per cent, and frost also did about 5 per cent damage.

Corn made a medium growth, but no cobs formed.

Alfalfa and western rye grass, sown in June, made a uniform growth and promised to give good crops next season.

Empress.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Frank Barry, and is situated in the northeast quarter of section 28, township 22, range 1, west of the 4th meridian, five and one-half miles south of the town of Empress.

The area selected on this farm was in prairie sod in 1915, and was well worked for cropping in 1916.

Wheat was sown in April, and made an excellent growth until harvested, yielding as high as 55 bushels per acre.

Oats were an exceptionally heavy crop, standing over 5 feet high, and yielding 132 bushels per acre.

The grain took first prize at the local exhibition, and all that could be spared was sold for seed in the neighbourhood.

Corn sown in May made a strong, even growth, standing 5½ to 6 feet high.

Alfalfa and western rye grass, sown in June, made a very strong growth, and was clipped and harvested, yielding about 8 tons of fodder. A good second growth was made and left for protection over winter.

Foremost.—The farm at this point on which the illustration fields are located is owned and operated by Mr. T. H. Frankish, and is situated in the southwest quarter of section 4, township 6, range 11, west of the 4th meridian. It borders a well-travelled road connecting Foremost and Avalon, and is about two miles from the town of Foremost.

The area selected at this station is practically new land, being a good, strong chocolate loam. A summer-fallow having been well worked in 1914, the rotations were all started in 1915.

Wheat continuously shows a marked decrease this season, yielding 33 bushels per acre and costing 35 cents per bushel, while the alternate wheat and summer-fallow rotation yielded 54 bushels per acre, costing 34 cents per bushel. Wheat in the three-year rotation yielded 50 bushels per acre, costing 30 cents per bushel.

Oats made a very uniform, strong growth, yielding 85 bushels per acre, costing 16 cents per bushel.

Corn, sown in May, grew to 4½ feet high, but no cobs formed.

Alfalfa and western rye grass both gave average yields and made excellent fodder for both summer and winter feeding.

The grain grown on this farm was an exceptionally fine sample and was selected for seed and also for exhibition purposes.

Grassy Lake.—The farm at this point on which the illustration fields are located is owned by Mr. F. N. Perry, and is situated in the southeast quarter of section 15, township 10, range 13, west of the 4th meridian, adjoining the town of Grassy Lake.

The grain on this farm made a fairly strong growth until late in August, when a heavy storm crossed this section, flattening down some of the fields, lessening the yields 30 per cent, and making harvesting very difficult.

Alfalfa sown in July also suffered by washing-out, and will have to be re-sown.

Western rye grass sown in July made a uniform growth, but no crop was harvested the first season.

Corn made a growth of from 6 to 7 feet in height, and some cobs were beginning to form.

High River.—The farm at this point on which the illustration fields are located is owned and operated by Mr. B. F. Kiser, and is situated in the southeast quarter of section 5, township 19, range 28, west of the 4th meridian, adjoining the east side of the town.

The area selected for this station had been cropped several years previous to selection for illustration purposes. It was summer-fallowed in 1915 and cropped in 1916. Owing to considerable volunteer grain growing on the area, particularly wild oats, it may be best to change the rotation another season to eradicate the wild oats.

Wheat sown in April and oats sown in May made only a medium growth until harvested. Frost injured these crops, doing about 5 per cent damage.

Corn made a uniform growth, and grew about 5 feet high. No cobs formed, however. It was injured by frost about 50 per cent before being harvested.

Alfalfa and western rye grass sown in July made a uniform growth, but this being the first season, no crop was harvested, and a good, heavy growth was left for a winter covering.

Jenner.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Jerry Fisher, and is situated in the west half of section 2, township 21, range 9, west of the 4th meridian, 1 mile east of the town of Jenner, and bordering a well-travelled road.

The area selected for this station was in prairie sod in 1915. It was well broken and back-set and thoroughly prepared for cropping in 1916.

Wheat and oats, sown early, made a good strong growth until August 10, when rust and frost lessened the yields about 20 per cent. However, fairly good crops were harvested, and all the surplus grain was sold for seed purposes.

Western rye grass sown in May, and alfalfa sown in June, made a strong, uniform growth, but no crop was harvested the first season.

Macleod.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Norman Grier, and is situated in section 33, township 9, range 26, west of the 4th meridian, about six miles from Macleod, and bordering a well-travelled road leading to Calgary.

The area chosen for illustration work was in prairie sod in 1915, was well broken and backset and thoroughly prepared for the different rotations in 1916. The season opened early and the grain was sown in good condition. Both wheat and oats made a rapid growth and were the first grains ready to cut in the district, escaping both frost and rust. The illustration fields became so noticeable that the operator had requests for large quantities of seed before the grain was cut.

Corn did exceptionally well on this station, growing to a height of 6 feet.

Alfalfa and western rye grass, sown in June, made a strong, uniform growth, but no crop was harvested the first season. A good covering was left for protection over winter.

Magrath.—The farm at this point on which the illustration fields are located is owned and operated by Mr. J. A. Meldrum, and is situated in the northeast quarter of section 11, township 5, range 22, west of the 4th meridian, 3 miles south of the town of Magrath.

This being the second season, the rotations have been established and a marked difference is noticeable in the yields.

Wheat continuously gave a yield of 36 bushels per acre, while wheat after summer-fallow alternately gave 54 bushels per acre, wheat in the 3-year rotation gave 59 bushels per acre, and wheat after corn 51 bushels per acre.

The oats also gave a heavy yield. All the grain grown on this station would make excellent seed.

Corn, sown in June, made a strong, uniform growth to a height of 6 feet. Some cobs formed, but did not fill.

Alfalfa and western rye grass both gave good crops of fodder and were harvested in good condition.

Manyberries.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Matti Mickelson, and is situated in the northeast quarter of section 25, township 5, range 6, west of the 4th meridian, one mile from Manyberries and about forty miles from Seven Persons railway station.

The season opened up rather late in this section.

Both wheat and oats were sown in May. This is the second season that grain has been grown on this station, and a marked difference is shown in the yields. The wheat on the continuous field gave a yield of 27 bushels per acre, at a cost of 40 cents per bushel, while that grown after summer-fallow yielded 48 bushels per acre, at a cost of 36 cents per bushel.

Corn, sown in May, made a medium growth and was tasseled, but no cobs formed.

Alfalfa and western rye grass, sown in July, made a uniform growth, but this being the first season, no crop was harvested.

Milk River.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Wm. Kinder, and is situated in the southwest quarter of section 30, township 2, range 15, west of the 4th meridian, three and a half miles east of the town of Milk River.

The area selected for illustration work was in prairie sod in 1915. All had to be broken and thoroughly prepared for seeding in 1916.

Wheat, sown early in April, made an exceptionally rapid growth until harvested. Very slight traces of rust were noticed, but did no damage. The crop yielded 54 to 61 bushels per acre. Banner oats yielded 86 bushels per acre.

Corn sown in May made a uniform growth, height about 5 feet, with cobs beginning to form.

Alfalfa and western rye grass made a strong, uniform growth, were clipped during the season and left on the surface as a mulch. A good growth was also left standing as a protection over winter.

Munson.—The farm at this point on which the illustration fields are located is owned and operated by Mr. R. R. Fraser, and is situated in the northeast quarter of section 3, township 30, range 20, west of the 4th meridian, 2 miles southeast of the town. It is on a well-travelled road, and can be seen from the town.

This being the first season this station has been in operation, all of the land except field "A" was summer-fallowed.

Wheat, sown on field "A" made a fair growth up until July, when visited by a hail-storm doing about 5 per cent damage. On August 10 and September 14, frost did between 50 and 60 per cent injury to the crop. The grain harvested was so shrunken that it was useless for seed.

The balance of the land was summer-fallowed, costing $5.97 cents per acre.

Medicine Hat.—The farm at this point on which the illustration fields are located is owned and operated by Mr. E. J. Hunt, and is situated in the east half of section 12, township 13, range 5, west of the 4th meridian, about six miles north of the town, and bordering a well-travelled road.

Both wheat and oats were sown in good time and made a uniform growth. This being the second season, a marked difference is shown in the yields on the rotations. Wheat on the continuous cropping yielded 26 bushels per acre; on the two-year rotation after fallow, 44 bushels per acre; on the three-year rotation, 42 bushels per acre; and after corn, 37 bushels per acre, proving altogether to be a choice sample.

Pincher Creek.—The farm at this point on which the illustration fields are located is owned and operated by Messrs. Sandgren and Carlson, and is situated in section 15, township 6, range 20, west of the 4th meridian, 2 miles west of the town of Pincher Creek.

The area on this station was summer-fallowed in 1915 and cropped as directed in 1916.

The land was thoroughly prepared and the grain sown in good condition.

Wheat and oats made a strong, uniform growth until July 1, when a hailstorm visited this section, doing considerable damage. The grain crop recovered some up to August 11, when a frost reduced the quality, making it useless for seed.

Corn, sown in May, was badly frozen, and had to be ploughed under.

Alfalfa and western rye grass made a strong, uniform growth, and were clipped during the summer and left as a mulch.

Whitla.—The farm at this point on which the illustration fields are located is owned and operated by Mr. R. H. Babe, and is situated in section 8, township 11, range 8, west of the 4th meridian, adjacent to the town of Whitla.

The area selected was in prairie sod; in 1915 it was ploughed and thoroughly prepared for cropping in 1916. Wheat and oats sown about the middle of April made a strong, rapid growth until harvested. There was no injury by rust, smut, or hail to any of the crops on this station. The grain was harvested in good condition, and was a choice sample for seed purposes. Wheat yielded from 41 to 46 bushels per acre, costing 41 cents per bushel to produce; and the oats, 112 bushels per acre, costing 14·8 cents per bushel to produce. Alfalfa and western rye grass made a strong, uniform growth, were clipped during the season and left on the land as a mulch. A good, strong growth was left standing as a protection over winter.

ILLUSTRATION STATIONS IN QUEBEC.

Aubrey.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Samuel Reddick, and is situated in the county of Chateauguay, on the main travelled road between Chrysostome village and Aubrey station. The land in this section is mostly all level and of a heavy sandy loam, with a good deal of clay underlaid with a clay subsoil.

The work during the season has been preparatory for a four-year rotation, to be as follows:—

One-quarter in hoed crops, chiefly corn and roots;

One-quarter in grain and seeded with clovers and timothy;

One-quarter in clover hay, two crops the same season, whenever possible;

One-quarter in hay or pasture.

This rotation will be adopted on all the stations in Quebec.

Owing to the cropping system previously carried on, this season's work has been mostly preparatory for the rotation. The heavy snowfall during the winter, and frequent heavy showers in spring-time, kept the land very wet and delayed seeding operations.

Drummondville.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Amedee Marier, and is situated in the county of Drummond, on the main road between Drummondville and St. Germain. The land is a heavy, sandy loam with a clay subsoil, typical of a large area.

This farm, and many others in the district, would be greatly improved by tile drainage. Frequent showers during the whole season kept the land so wet that it was almost impossible to get the crops sown, and after sowing most of the crops were drowned out. In the autumn, good, large water furrows were made to carry off the surplus water. Many continuous crops of hay had been grown on this land, and it will take another season to get a four-year rotation established.

Lac à la Tortue.—The farm at this point on which the illustration fields are located is owned and operated by Mr. S. T. Lupien, and is situated in the county of Champlain, on the leading road adjoining the town of Lac à la Tortue. The land is a very light and sandy subsoil, with but little humus on the surface. A regular four-year rotation is being carried on, besides five one-acre fields being sown with different leguminous crops with the object of adding humus to the soil. This being the first season, most of the work was preparatory.

Nomining.—The farm at this point on which the illustration fields are located is owned and operated by Mr. E. Lamoureux, and is situated in the county of Labelle, on one of the leading roads adjoining the town of Nomining. The land is a very light, sandy loam, almost void of humus. Most of this area had been in hay and required ploughing and thorough cultivating before a rotation could be established. It is proposed to start a four-year rotation on this farm.

The spring of 1916 opened up fairly early; crops of all kinds made a good growth up to about July, when it became very dry, lessening the yields per acre.

New Carlisle.—The farm at this point on which the illustration fields are located is owned and operated by Mr. E. M. Legallais, and is situated in the county of Bonaventure, on the main road between Paspebiac West, about two miles from the town of New Carlisle. The land is a red, sandy loam, rather poor in quality. Weeds have got well established, particularly the sow-thistle. Thorough cultivation will have to be adopted to eradicate the weeds, and a short rotation, along with barnyard manure and heavy seeding of clover, to bring up the humus in the soil. Several kinds of crop had been grown on this land the previous year, and during the season of 1916 most of the work was preparatory in order to arrange for a systematic four-year rotation.

The growing season opened up early and crops got a good start, but were afterwards checked by drought.

Rimouski.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Nazaire Begin, and is situated in the county of Rimouski, about one mile from the town of Rimouski. The soil is a light, sandy loam, with a streak of peaty soil in the four-year field. The subsoil is a hard clay mixed with stone, and in some places the shale rock comes quite close to the surface.

The past season has been more of a preparatory one, arranging to establish both a three-year and a four-year rotation.

The spring opened up fairly early, and good growing weather prevailed until about August, when it became rather dry for the balance of the season.

Stanbridge East.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Chas. S. Moore, and is situated in the county of Missisquoi, on the main road leading to Bedford, and adjoining the town of Stanbridge East. The soil is a heavy, sandy loam, with a sandy and stony subsoil. The surface is rolling and full of moisture. Two rotations of four-year duration are to be established on this station, one on tile-drained land, the other on undrained

land adjoining. The work on this station this season was mostly preparatory, however. Clover, wherever sown, made a very strong growth. Heavy rains delayed spring work, and had this land not been tile-drained, some of it would not have been sown until very late.

St. Gédéon.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Wilfrid Simard and is situated in the county of Lake St. John, on a well-travelled road leading to the railway station. The soil is a heavy, sandy loam, well supplied with vegetable matter, underlaid with a clay subsoil.

Two rotations are planned for this station, one of three-year duration, as follows:—

1st Year.—Hoed crops and manured.

2nd Year.—Grain seeded with timothy and clovers.

3rd Year.—Clover hay, two cuts if possible.

A four-year rotation is also to be established as on the Aubrey station.

Owing to several kinds of crop being grown on this land for a number of years, most of the work the past season was preparatory.

St. Isidore.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Adelard Bilodeau, and is situated in the county of Dorchester, adjoining one of the leading gravel roads, about one mile from the village of St. Isidore.

The soil is a heavy, sandy loam, mixed with clay underlaid with a clay subsoil. This station would be greatly improved by tile drainage.

Owing to the frequent heavy rains and consequent wet condition of the soil, spring work was very much delayed.

This being the first year, the work on this station has been preparatory for a four-year rotation.

Tile drainage would improve conditions on this property. There is also a very large area in the neighbourhood which would be greatly improved if the land were tile-drained.

Ste. Julie de Verchères.—The farm at this point on which the illustration fields are located is owned and operated by Mr. Adolphe Hebert, and is situated in the county of Verchères, adjoining the village of Ste. Julie, in a fairly thickly-populated district.

The soil is a heavy loam, with considerable clay and a clay subsoil. The land on this station is fairly level, being similar to a very large section of the neighbourhood. The work on the station during the season was preparatory for a four-year rotation.

The work on the illustration stations is attracting the attention of farmers more each year.

The strong, uniform growth, the early and even ripening qualities of the grain fields, with the attractive appearance of the forage crops, make farmers inquire as to varieties of grain, fodder crops, cultivation, and the system of rotation carried on.

It is gratifying to note that so many farmers are availing themselves of the opportunity of purchasing for seed the well-graded grain grown on the stations.

DIVISION OF EXTENSION AND PUBLICITY.

REPORT OF W. A. LANG, OFFICER-IN-CHARGE.

The work of this division was continued during the year along the lines indicated in previous reports, namely:—

(1) The display at fairs and exhibitions of an Experimental Farms exhibit.

(2) The issuing and distribution of Exhibition circulars. Forty new circulars were brought out during the year.

(3) The enlarging of the mailing lists. The total number of names on the departmental lists was increased by about 42,250 names during the year.

(4) The supervision of the preparation of "Seasonable Hints." Nos. 4, 5, and 6 were distributed during the year to the mailing list, and 60,000 copies of each issue were sent to 3,000 branches of the principal Canadian banks.

(5) The issuing of press articles. Some forty-five of these were sent out, during the year, to the agricultural press.

In the exhibition work, the plan followed was to make each branch Farm and Station a centre from which an exhibit was sent out over a circuit of fairs in the district. One hundred and thirty-two fairs were covered from the branch Farms in this way, and thirty by exhibits sent out from the Central Farm at Ottawa.

The exhibits sent out, while attractively arranged and staged, were primarily of an educative character. Every effort was made, not only to interest the visitor in the exhibit itself, but to bring to his attention the work of the Experimental Farms system, and its efforts to aid the farmer. The exhibition work is evidently appreciated by the fair authorities and by the public, as is shown by the increased number of requests for the Experimental Farms exhibit.

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

REPORT OF THE SUPERINTENDENT, J. A. CLARK, B.S.A.

THE SEASON.

The winter of 1915-16 was mild and open, with brief periods of cold weather near the middle of both January and February. March had an extraordinary snowfall of 66 inches. It was stormy and wintry, with a mean temperature almost as low as that of the previous months. The snow went away gradually in April. Spring work commenced on May 8, with the first seeding at the Station on May 13. The weather continued so favourable that seeding operations were completed almost two weeks earlier than for several years. June and July were good growing months. August was dry, and an average hay crop was saved, almost without damage from rain. Grain, potatoes, and roots gave full crops, and a greater proportion than usual of garden corn and tomatoes ripened. Fruit gave a well-coloured, medium crop. The autumn pastures remained good, and the live stock were in excellent condition when housed. Fall ploughing, though delayed by the dry weather of September, was generally completed before winter. The winter months were favourable for getting work done, and March, 1917, has been exceptionally fine.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature, Fahrenheit.				Precipitation.					Bright Sunshine. Hours.
	Maximum.		Minimum.		Rainfall.		Snowfall.		Total.	
	Date.	Deg.	Date.	Deg.	Days.	In.	Days.	In.	In.	
1916.										
April	26	55	4	24	8	2·38	4	9	3·28	164·2
May	25 & 26	65	2	30	11	2·08	.....	.....	2·08	209·4
June	28	76	2	38	14	2·74	.....	.....	2·74	202·7
July	21	86	6 & 18	48	15	4·14	.....	.....	4·14	233 4
August	18	81	2	42	10	1·79	.....	.....	1·79	251·7
September	1 & 2	79	20	39	9	2·02	.....	.....	2·02	188·6
October	1	78	19	28	13	4·22	.....	.....	4·22	120
November	9	55	27	10	8	2·29	6	14·5	3·74	88·2
December	13	50	29	1	14	3·4	9	11·5	4·55	32·7
1917.										
January	12	48	26	−21	5	1·98	12	21·5	4·13	114·8
February	10	45	3 & 4	−16	4	2·52	11	14·3	3·95	128·4
March	27	51	5 & 6	4	6	1·29	3	13	2·59	178·2
Total annual	.....	.....	.....	.....	117	30·85	45	83·8	39·23	1,912·3

LIVE STOCK.

Horses.—There are now on the Station three teams of draught horses and two colts, one of the teams being pure-bred Clydesdale mares. The number of hours horse labour for the year totals 13,330. Valuing hay at $10 per ton, oats at $40 per ton, oil cake at $40, bran at $25, and roots at $4, the horses cost 43¾ cents per day at heavy work. The average cost of feed per day for a 5-year-old colt was 15½ cents.

Dairy Cattle.—No dairy herd has yet been established at this Station, two Ayrshire cows only being kept this year. During the winter the following daily rations were fed: Dry cow, 1 pound bran, 50 pounds turnips, 18 pounds mixed hay; cow yielding 17 pounds milk daily, oats 3 pounds, bran 3 pounds, oil cake 1 pound, turnips 50 pounds, mixed hay 18 pounds; cow yielding 40 pounds milk daily, cottonseed meal 1 pound, oats 5 pounds, bran 5 pounds, oil cake 2 pounds, turnips 50 pounds, mixed hay 18 pounds. One cow in a lactation period of 384 days gave 8,263 pounds milk, and the other 7,026 pounds in a period of 334 days. The profit on cow No. 1 between calvings amounted to $112.63, and on cow No. 2, $92.23. These records surpass those of the previous year.

Steers.—Twenty steers were purchased in the autumn, and turned into good pasture adjoining a field of rape, to which they had access. They were dehorned before stabling, and all the steers made good gains during the following week. The average cost of the steers, including feed up to the time the experiments were started, was $6.67 per hundred pounds live weight. The total weight of the five pens at the start was 9 tons and 20 pounds. The weight at the time of the sale, after a sixteen-hour fast, was 11 tons, 979 pounds, or a gain of 2 tons 959 pounds. The average price realized at the auction was $10.55 per hundredweight. The average profit, after adding the total cost of feed, etc., at current prices to the value of the cattle on November 1, was $31.09 per steer. These gains were made in 135 days. The following comparisons were made:—

Beef versus Dairy Steers.—Pen I, Shorthorn steers under 2 years old, were compared with dairy grade steers in pen II, that were about 80 pounds heavier per head at the start.

These two pens were fed as nearly alike as possible. The amount fed each pen on the days mentioned, which are taken at random during the period, shows the method of feeding which was used, namely, an abundance of succulent feed, and a gradual increase in the grain fed from the start. On November 17, each steer's share of the feed was 18¾ pounds of corn stover that had been run through a cutting box and allowed to warm, 60 pounds turnips, 8¼ pounds hay, 1 pound crushed oats and barley, and one-quarter pound bran. On January 1, each steer was fed 40 pounds mangels, 10 pounds hay, 3¾ pounds crushed grain, and 2½ pounds bran. The dairy steers gained 728 pounds, while the Shorthorn steers gained 1,048 pounds, or 320 pounds more, on the same feed.

Heavy feeding of Roots throughout the period versus gradually decreasing the Roots fed from the start to the finish.—Pen II were fed as described above. Pen V were fed as follows: They were started the same as the others, and on November 17 were getting the same feed. On January 1, they got 45 pounds roots, 11¼ pounds hay, 2½ pounds crushed grain, and 2 pounds bran. On February 10, they were fed 30 pounds roots, 12½ pounds hay, 3¾ pounds crushed grain, and 3 pounds bran. Pen II gained, as already stated, 728 pounds, pen V gained 1,195 pounds, or 467 pounds more in 135 days.

Lambs.—Thirty lambs were purchased in November at 9½ cents per pound live weight. Experiments with different roughages were conducted. The lambs were sold at auction March 15, 1917, and brought 14¼ cents per pound. The average profit per lamb, over the first cost, after deducting the value of two lambs lost, and the cost of the feed at current prices, was $2.84.

POULTRY.

The housing equipment consists of one permanent house 16 by 32, for 100 hens, three colony houses 10 by 12, and three colony houses 8 by 12, along with a number of small rearing coops.

The birds kept are the Barred Plymouth Rock and the White Leghorn, there being 74 of the former and 125 of the latter on hand at the close of the year.

A large number of eggs were sold for hatching purposes, and three incubators were run at the Station poultry plant. These were compared with natural incubation. From the incubators 61·7 per cent of fertile eggs hatched; under the hens, 77 per cent.

One shipment of day-old chicks was made to Murray River, reaching its destination in good shape.

The 73 Rock hens laid 120½ dozen eggs, and the 125 White Leghorn hens 316 dozen, from January 1 to March 31, 1917.

BEES.

The bees were prevented from swarming during the summer. They produced a good crop of honey, and one strong colony was wintered in the new bee cellar. It has come through in good condition.

FIELD HUSBANDRY.

Rotations.—The following rotations are being tested at the Charlottetown Station: Rotation "A" (five years' duration)—First year, hoed crop; second year, grain seeded down; third year, clover hay; fourth year, timothy hay or pasture; fifth year, grain seeded down, clover ploughed under in autumn, and light dressing manure applied.

The land under this rotation provides a large quantity per acre of food suitable for live stock.

Rotation "B" (five years)—First year, hoed crop; second year, grain seeded down; third year, clover hay, ploughed in autumn; fourth year, grain seeded down; fifth year, clover hay or pasture, top-dressed and ploughed in autumn. This rotation is similar to "A," but is planned to control perennial weeds.

Rotation "C" (four years), suitable for a stock farm—First year, hoed crop; second year, grain seeded down; third year, clover hay; fourth year, timothy hay or pasture. Manured in fall and ploughed for roots.

Rotation "D" (three years), suitable for stock farm with abundant rough pasture —First year, hoed crop; second, grain; third, clover hay, manure and plough in fall.

Rotation "G" (seven years)—First year, oats, seeded down; second year, hoed crop; third year, grain; fourth year, clover hay; fifth year, timothy hay; sixth and seventh years, pasture. This long rotation is thought to check or destroy diseases affecting hoed crops, and has been very generally followed on the island.

Crop Yields.—The average yields per acre on the Experimental Farm rotations were: Wheat—Four fields gave an average yield of 25 bushels and 3 pounds. The yield was greatly reduced by two blights, one a *fusarium* and the other *cladosporium,* which did much injury to the wheat crop throughout the province. Barley—"Charlottetown No. 80," a deciduous-awned variety, produced 49 bushels and 7 pounds of barley on rotation A1, which has an area of 1 acre. Hay—The average yield from twelve fields of hay was 2 tons, 227 pounds per acre. Mangels—The average yield from three fields of mangels was 882 bushels and 21 pounds per acre. Oats—The average yield from three fields of Banner oats was 64 bushels and 4 pounds. A hot, dry period, just when the grain was filling, greatly reduced the yield of the earliest sown oats. Potatoes—A small field of Irish Cobblers gave a yield at the rate of 247 bushels per acre. One acre of Green Mountains gave a yield of 297 bushels.

Cultural Experiments.—In 1916 an area was laid off into 440 plots of one-fortieth acre each for the purpose of cultural investigation work along the following lines:—

No.	Experiment to determine best—	Plots.	Rotation.	Total plots.
1	Rates of seeding clover and timothy	9	4 years	36
2	Method of applying barnyard manure	9	4 "	36
3	Method of after-harvest cultivation of sod land for grain	9	5 "	45
4	Method of seeding nurse crop for yield of hay	5	4 "	20
5	Method of seed-bed preparation	11	3 "	33
6	Rates of seeding nurse crop of oats	4	4 "	16
7	Depths of ploughing sod for roots	6	4 "	24
8	Depths of ploughing sod for grain	6	5 "	30
9	Rates of seeding nurse crop of barley	4	4 "	16
10	Method of treating neglected land	8		8
11	Depths for underdrainage	21	4 "	21
12	Depths of seeding cereals	4	4 "	16

Averages covering a period of years will, of course, be necessary before any reliable conclusions can be drawn.

FERTILIZER EXPERIMENTS.

The investigational work with fertilizers was continued. One experiment is to determine the quantities and proportionate composition of a fertilizer which will yield the greatest profits. Results so far would seem to indicate that phosphoric acid

is the most important fertilizer constituent. A second experiment endeavours to ascertain the relative efficiency of different sources of nitrogen and phosphoric acid. This year's results showed that nitrate of soda was the best source for nitrogen, and a combination of acid phosphate and basic slag the best source for phosphoric acid. An experiment to determine the value of fertilizer prepared from seaweed was also carried on.

CEREALS.

In the uniform test plots of cereals, ten varieties of wheat were tried, with yields of from 42 bushels 26 pounds to 25 bushels 24 pounds per acre; fifteen varieties of oats, yielding from 93 bushels 20 pounds to 65 bushels 12 pounds per acre; fourteen varieties of barley yielding from 85 bushels 26 pounds to 32 bushels 45 pounds; and four varieties of peas with yields from 19 bushels 34 pounds to 16 bushels 49 pounds per acre.

The best strains of registered seed were again multiplied on the regular rotation area.

Co-Operative Test of Oats.—The five-year co-operative test of the three leading varieties of oats commonly grown in the province was completed. The average yield per acre from fifty plots of each, as tested on the ten farms, was as follows:—

Banner	62 bushels	8 pounds.
Old Island Black	56 "	6 "
Ligowo	55 "	8 "

FORAGE CROPS.

Thirteen varieties of Indian corn were tested on 1/100 acre plots. The seed was soaked in arsenate of lead before planting, which prevented any injury from birds. The yields ranged from 7 tons to 13 tons 450 pounds per acre. The crop was shocked and allowed to dry out for corn stover. Before feeding it was run through a cutting box and allowed to warm slightly in the pile. The cattle then ate it with relish.

In field roots, twenty-four varieties of turnips, sixteen of mangels, six sorts of carrots, and four of sugar beets were tested. The turnips were badly injured by the white grub or larvæ of the June bug, the rust fly attacked the carrots, and some general injury was done by cutworms. The yield of turnips was from 24 tons 1,000 pounds to 15 tons 1,500 pounds per acre; mangels, from 21 tons 1,550 pounds to 14 tons 1,950 pounds; carrots, from 13 tons 950 pounds to 7 tons 950 pounds; and sugar beets, from 15 tons 1,000 pounds to 12 tons per acre.

In clovers and grasses the late spring snowstorms protected the former, but the backward spring weather retarded growth. The crop was, however, an average one. Four plots of alfalfa yielded from 2 tons 550 pounds to 2 tons 1,500 pounds per acre.

HORTICULTURE.

Orchards.—The young orchards of apple, plum, and cherry trees made a fair growth during the season, and bore a light crop of fruit. The young pear orchard that was moved the previous winter suffered but very slightly from the transplanting, and grew well. The old apple orchard gave a good crop of clean fruit.

Small Fruits.—The small fruits gave good returns, except the currants, which were apparently injured by frost at flowering time, and later by stem borers.

Vegetables.—Variety tests and cultural experiments were conducted with all the leading vegetables. The season was a most favourable one.

Lawn Trees, Shrubs, and Flowers.—The numerous trees and shrubs on the lawns and along the railway front made good growth during the season, and are very attrac-

tive. The annual and perennial flowers, including the water-lilies and iris about the lily-pond, add greatly to the appearance of the Station, and attract many visitors during the summer.

BUILDINGS.

Two small houses were built for rearing chickens during the summer. The Station buildings are all in good condition.

ADDITIONAL LAND.

Five acres of land fronting on the Mount Edward road were leased for ten years from Judge Fitzgerald, with an option of purchase any time during the period.

SALE OF SEED GRAIN, AND DISTRIBUTION OF SEED POTATOES.

The many reports received from those who purchased registered grain from the Experimental Station, in the spring of 1916, are most favourable, and demonstrate conclusively that the growing of the most productive strains pays well. This was particularly true in connection with Charlottetown No. 80 barley, a two-row variety that drops most of its awns in the field. One of our prominent C.S.G.A. members wrote: "This is a farmer's barley."

EXHIBITIONS.

Many features were added to the Station exhibits, which made them outstanding in the buildings at the provincial exhibition at Charlottetown, and at the county exhibitions at Summerside and Georgetown. A special exhibit was sent to Souris. A very fine floral exhibit with special poultry and sheep husbandry features, was set up at the annual flower show of the Prince Edward Island Floral Association, August 30 and 31, 1916. The superintendent judged at the various exhibitions, at the Kinkora School Fair, and at the principal seed fairs held in the province.

SHORT COURSES AND AGRICULTURAL MEETINGS.

The superintendent gave a course of lectures on "Field Crops, Tillage, and the Judging of Cereals" at a series of short courses held during the winter months, at the following centres throughout the province: Glenwood, Bridgetown, Mount Herbert, Vernon River, Tracadie, Bonshaw, Mount Stewart, Montague, and Kensington. Much interest was taken by these communities, and many letters indicate that these courses are a connecting link between the Experimental Station and the farmers of the province. The superintendent gave lectures on horticultural subjects, in Prince of Wales College, to the six short courses in domestic science held during the winter; and also gave demonstrations to the boys of the college on splices, knots, and the making of rope halters. The judges of the Standing Fields Competition for the province held a field conference with the superintendent in August at the Station.

The superintendent was elected chairman of the Committee on Production for the National Service League of Prince Edward Island, and assisted in organizing the labour and resources of the province to produce maximum war supplies for the coming year.

FARMERS' PICNICS, VISITORS.

The farmers' picnics were again a great success. Many of the farmers' institutes arranged to come to the Station on the same day. The number of visitors recorded during the year was 6,203.

EXPERIMENTAL STATION, KENTVILLE, N.S.

REPORT OF THE SUPERINTENDENT, W. S. BLAIR.

The weather during April was exceptionally dry, and some of the land was ready to be worked on the 24th; and, as May was an ideal spring month, farming operations were well advanced when that month closed. Heavy precipitation in June, when rain fell on eighteen days, made spraying difficult, and also resulted in poor weed control. Favourable weather in July allowed the hay crop to be harvested in good condition. Unusually bright weather in August was well suited to the completion of the hay harvest, but potatoes and roots suffered greatly. No frost was experienced in September, and continued warm weather in this month made harvesting conditions excellent. October was rainy, but potatoes, roots, apples, and vegetables were harvested in good condition. The early part of November was exceptionally cold, but the weather opened up a little after the 24th, thus allowing the turnip crop to be harvested and much fall ploughing done. December was not a severe month, and the mean average temperature for January was the lowest it has been for the last three years. February was about normal, and March was ideal.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature F.			Precipitation.				Total Sunshine.
	Mean.	Highest	Lowest	Rainfall.	Snowfall.	Total.	Heaviest in 24 hrs.	
1916.	°	°	°	Inches.	Inches.	Inches.	Inches.	Hours.
April	39·81	57	21	1·85	4·9	2·34	1·32	139·9
May	49·07	70	29	1·78	0·0	1·78	0·45	186·8
June	58·3	79	37	3·69	0·0	3·69	1·45	160·5
July	66·04	88	41	2·66	0·0	2·66	0·88	205·7
August	64·9	87	42	0·86	0·0	0·86	0·49	221·2
September	58·93	84	33	1·74	0·0	1·74	0·57	174·6
October	48·97	76	24	5·38	0·0	5·38	1·30	166·0
November	37·5	64	3	2·18	13	3·48	1·05	108·7
December	27·83	48	2	3·15	13·5	4·50	0·80	50·6
1917.								
January	18·85	45	−15	2·33	16·0	3·93	1·20	84·2
February	18·335	49	− 7	2·59	11	3·69	0·78	95·5
March	28·525	57	9	1·56	14·5	3·01	1·2	166·3
Total annual	.....	.....	.....	29·77	72·9	37·06	.....	1,760·0

LIVE STOCK.

Horses.—Nine, including seven heavy and two lighter horses, are kept. Records were kept of the cost of feeding heavy horses in summer and in winter, and also of the cost of winter-feeding idle horses. The average cost of feeding heavy horses in winter was found to be 33·6 cents per day, and in summer 45·9 cents per day, while the idle horses, receiving no grain, were carried through the winter at a cost of 12·2 cents a day.

Cattle.—There are twenty-nine head of registered Shorthorn stock on hand. Eleven registered bull calves were sold during the year. Six of these were yearlings and five were sold when between 3 and 6 months old. Eight of the cows are in the Record of Performance test. The herd has made very satisfactory returns during the year, and the heifers raised give promise of being good producers. Twenty-four steers were purchased in the fall and put on a feeding test. They were dehorned in November and divided into two uniform lots of twelve each. Lot 1 was fed 60 pounds of swede turnips each per day for the first three weeks, 55 pounds each per day for the next four weeks, and 50 pounds each per day for the balance of the feeding period. Lot 2 was fed 50 pounds each per day of corn ensilage for the first three weeks, 45 pounds each per day for the next four weeks, and 40 pounds each per day for the balance of the feeding period. Both lots were fed the same amount of a meal mixture composed of 200 pounds crushed oats, 200 pounds bran, 200 pounds cottonseed meal, and 100 pounds corn meal, and 10 pounds of hay each per day .

The results showed that the steers fed on turnips made an average gain of 286·16 pounds in 136 days, or 2·10 pounds per day, at a cost of 10·73 cents per pound gain. The average increase in value per steer in this lot was $52.95 for the feeding period, and the profit per steer $22.23.

The steers in the other lot, fed corn ensilage as a succulent, made an average gain of 304·5 pounds in 136 days, or 2·24 pounds per day, at a cost of 10·36 cents per pound gain. The average increase in value per steer in this lot was $54.71 for the feeding period, and the profit per steer $23.14.

To sum up, the steers fed corn ensilage as a succulent made greater gains at less cost, and were consequently sold at a greater profit, than those fed turnips.

A comparison was made between the best six and the poorest six in each lot. The best twelve steers were sold at an average profit of $26.36, and the poorest twelve at an average profit of $19.02, a difference of $7.34.

A comparison was also made between the gains during the first and second halves of the feeding period. The steers in the two lots made average gains of 185 pounds and 201 pounds, respectively, in the first half, and 101 pounds and 103 pounds in the second half, of the feeding period.

A record has been kept of the cost of raising a grade steer, and this record shows that the cost of feed for the first year was $40.23, and for the next 330 days, $37.54. The value of the steer at the end of that time was $104.50.

POULTRY.

Three breeds of poultry were carried during the year, namely, Barred Plymouth Rocks, Rhode Island Reds, and White Wyandottes, a total of 238 birds. These are accommodated in two permanent houses, seven colony houses, and two brooder houses.

Three makes of incubator were tested, and out of 2,450 eggs set, 973 chickens were hatched. Of the different breeds, 22·8 per cent of the White Wyandotte eggs were hatched, 45·8 per cent of the Plymouth Rocks, and 52·2 per cent of the Rhode Island Reds. Artificial incubation and natural incubation were compared, 309 eggs being set under twenty-two hens; 17·5 per cent of these proved infertile, and of the remainder, 65·2 per cent were hatched. By artificial incubation, 47·4 per cent of the fertile eggs were hatched.

The total number of chickens hatched was 1,064. Some 300 succumbed to an attack of pneumonia when quite young, but the remainder were raised with little loss.

The winter grain ration for laying hens was made up of equal parts of oats and cracked corn, except in November, when wheat also formed part of the ration. In ad-

dition to the above, a dry mash was always before the hens in hoppers. The cost to produce a dozen eggs during the winter months ranged, in the different pens, between 23 cents and 61 cents.

Forty-five birds were crate-fed for two weeks at a cost of $9.67. Each bird increased in value during that period 31 cents, the increase in weight per bird being 1·15 pounds.

Ten capons were fed from November 1 to February 15, being crate fed for the last two weeks. The increase in value over cost of feed for the first four months of the feeding period was 21 cents per bird, and for the last two weeks 8 cents, making a total profit for the whole period of 29 cents per bird.

BEES.

Of the fourteen colonies wintered outside in 1915-16, only ten survived, owing to the fact that some of the colonies were weak, and the weather in February and March was unusually severe. The total production of honey for the season was small, only 24 pounds being extracted. Only one swarm was produced, and in the fall, the eleven colonies were reduced to eight by uniting some of the weaker ones.

FIELD HUSBANDRY.

Rotations.—No crop rotations have yet been started at this Station, but, as clearing proceeds, it is hoped that land may become available for this work.

Crop yields—Eight acres of Longfellow corn produced a crop of 99 tons 1,837 pounds. Other small areas brought the total ensilage crop to 165 tons 1,898 pounds. Two acres used in the fertilizer experiment were sown to Victory oats, and yielded from 52 bushels to 59 bushels 9 pounds per acre. Three acres of Banner oats gave an average yield of 41 bushels 11 pounds per acre. The seven acres of dyked marsh was sown to oats, seeded down with 8 pounds timothy, 8 pounds red clover, and 2 pounds alsike per acre. The whole area yielded 333⅓ bushels of oats. The total oat yield was 1,127·4 bushels. Ten acres of hay yielded at the rate of 2 tons 865 pounds per acre. Besides these crops, 32·4 bushels wheat, 31·7 bushels oats, 27·8 bushels peas, and 7 bushels vetch were grown.

FERTILIZER EXPERIMENTS.

Fifteen acres were utilized for the purpose of carrying on investigational work with fertilizers. An experiment to determine the quantity and proportionate composition of a fertilizer which will yield the greatest profit was continued for the second year on a three-year rotation. Another experiment would seem to show, so far, that nitrate of soda is slightly more effective than sulphate of ammonia as a source of nitrogen, and that acid phosphate is the best source of phosphoric acid. Other experiments compare the value of dog-fish scrap, nitrate of soda, and sulphate of ammonia as sources of nitrogen, endeavour to determine the influence of ground limestone in addition to various fertilizers, and the value of manure. The experiment with sea-weed fertilizer was also continued.

CEREALS.

The cereal work is carried on on land broken from green stumps in 1913-14. Three varieties of barley, two of wheat, three of oats, and two of field peas were tested in half-acre plots. Marquis wheat yielded 18 bushels 27 pounds per acre, and Red Fife 17 bushels 36 pounds per acre. Of the three varieties of barley, Charlottetown No. 80 gave higher yields than Manchurian or Canadian Thorpe, the crop being at the rate of 29 bushels 16 pounds per acre. Victory was the best variety of oats, yielding

52 bushels 4 pounds per acre, and Arthur proved superior to Golden Vine peas, yielding 34 bushels 23 pounds per acre. A comparison was made between White Vetch and Black Vetch for seed. The White Vetch was a week earlier, and gave a better yield than the Black.

FORAGE PLANTS.

The land used for the variety tests of roots and corn was in potatoes in 1915. In the spring of 1916, stable manure was applied at the rate of 15 tons per acre, and after the land had been ploughed and disced, 1,000 pounds basic slag per acre was applied and disced in. A fertilizer containing 4 per cent nitrogen and ten per cent phosphoric acid was then applied at the rate of 500 pounds per acre, and the land again harrowed and smoothed.

Indian Corn.—Sixteen varieties of ensilage corn were tested, Essex Dent giving the highest yield, 16 tons 1,200 pounds per acre.

Roots.—Twenty-one varieties of swede turnips and twenty-three varieties of mangels were planted. The turnips varied in yield from 15 tons 100 pounds to 32 tons 700 pounds per acre and the mangels from 14 tons 700 pounds to 25 tons per acre. Of the six varieties of carrots, Improved Short White gave the highest yield, 22 tons 1,650 pounds per acre, and sugar beet seed of Italian origin gave greater returns than Ontario grown or German seed.

Grasses and Clovers.—Six one-twentieth acre plots of Grimm's alfalfa gave a total yield of 8 tons 310 pounds. The results with alfalfa this year would seem to indicate that this crop can be profitably grown by giving good conditions for starting the plants, and using sufficient limestone to correct soil acidity and supply the lime required for the crop. Various kinds of grasses were tested, and turnips, mangels, and carrots were grown for seed.

HORTICULTURE.

Fruits.—The total area in orchard fruits is 46·7 acres. The land, however, actually occupied by the trees is only one-sixth of the above area, as the space not occupied by the growing trees is devoted to other crops. During the past season a space of 3 feet each side of the trees was kept cultivated and free from weeds. The land outside of this was devoted to other crops. Turnips were grown in the peach and cherry orchard, peas in the plum orchard, clover and grain in the main commercial orchard, and potatoes in the orchard where fertilizer experiments are being conducted. The vegetable crops were also grown in the orchard area. By following this system, vigorous growth is maintained in the orchard trees and all available land, other than that actually required by the trees, is used to produce maximum crops.

The total orchard fruits planted are as follows:—

	Varieties.	Number of Trees
Apples	227	2,616
Plums	92	367
Cherries	54	154
Peaches	47	106
Pears	55	223
Apricots and quince	12	23
Total	487	3,489

Work was continued at the orchards located at Falmouth, Berwick, and Bridgetown. Through the experiments being conducted at these orchards, much information of permanent value is being secured.

Vegetables.—A number of variety tests were conducted with different kinds of vegetables and other experiments to determine the best cultural methods for vegetables

were carried on. The season was particularly suitable for tomatoes and corn, which made an excellent showing.

The potato work was confined to variety and cultural tests, and the yield per acre ranged in the varieties from 302 bushels to 117 bushels per acre. The Green Mountain strains ranged in yield from 313 to 180½ bushels per acre, a difference of 132½ bushels, all grown under similar conditions. Seventeen lots of Irish Cobbler ranged from 235 bushels to 93 bushels per acre, a difference in favour of the best yielding of 142 bushels per acre. Seed secured in 1916 from fifteen growers of Garnet Chili yielded from 278 to 158 bushels per acre, a difference of 120 bushels per acre. The Garnet Chili seed secured in 1915 and again planted in 1916 gave crops from 212 to 68 bushels per acre, a difference of 144 bushels per acre.

Ornamental Gardening.—Approximately 18 acres at the front of the farm are more or less given up to grounds and buildings. Part of this area is in old apple trees which are growing promiscuously, and the ground is not cultivated around them. These trees have produced some very satisfactory fruit. The grounds outside of this are in lawns and ornamental shrubs, trees, and flowers. The land along the front of the farm is very sandy, consequently the plants growing on these areas suffer very much during dry periods. The lawns during the summer time become brown, and are not as attractive as they otherwise would be. The past season, except during the latter part of August, was exceptionally favourable, and the lawns retained their green for the greater part of the season. The shrubs and trees are making excellent growth, and all annual and perennial flowering plants made an excellent showing.

FARM IMPROVEMENTS.

Buildings.—One poultry house for 100 hens was constructed during the year, and a shed-roof building 16 feet by 40 feet was erected for the wintering of idle horses and steers. Owing to the addition of an extra pair of horses, the stable in the horse barn would not accommodate them, making the erection of this building necessary.

Clearing Land.—Fifteen acres of additional land were broken up during the season, making in all 127 acres cleared since the farm started in 1911, as set forth in the following table.

The expenses in connection with the clearing of the 15 acres amounted to $3,475.45, or $231.69 per acre:—

	Acres.
New land broken to the end of 1912	55
" " in the year of 1913	17
" " " " 1914	20
" " " " 1915	20
" " " " 1916	15
Total new land broken	127
Land still available for clearing	10
Front area devoted to buildings and grounds	13
Area devoted to poultry	2
Area for picnic grounds, etc	2
Dyked area	9
Marsh pasture area	3
Ravine pasture	5
Area in ravine which is too rough for clearing	125
Total	301

Roads and Bridges.—New roads were built at the rear of the farm, making a satisfactory automobile road to the rear fields. These roads were built of field

stone, covered with earth. The carriage road running through the lower part of the ravine was also improved, and four bridges crossing the brook at different places constructed, making a fairly satisfactory carriage drive.

Overflow Water.—The catch basins put in last season have materially lessened the erosion usually caused by heavy rains and spring floods. By continuing this work it is hoped the usual damage from water will be overcome.

Underdraining.—It has not been possible to do much underdraining, although several of the fields at the rear of the farm will require that this be done. One drain of 1,000 feet of 4-inch tile was put through an area in one of the fields at the rear, and several smaller drains, totalling about 500 feet, were put in in another field. Owing to there being many boulders in the soil, underdraining in these fields is very difficult.

EXHIBITIONS.

Exhibitions were attended at Bridgewater, Yarmouth, and Shelburne, where displays illustrating the work being done by the Experimental Farms' system were arranged. These exhibitions were well attended, and much information given to visitors as to the nature of the work being done.

AGRICULTURAL MEETINGS.

In addition to attending meetings of the Fruit Growers' Association and Farmers' Association of Nova Scotia, most of the winter months were taken up in attending and addressing meetings in the counties of Kings, Hants, Digby, and Annapolis. The short courses at Truro and Lawrencetown were attended, and addresses given.

EXCURSIONS.

A large farmers' picnic from the country bordering on the Dominion Atlantic railway was held during July, and many smaller excursions and picnics were held during the season.

In order to give every facility possible for visitors, ample picnic grounds, with tables and a house for heating water, have been provided.

EXPERIMENTAL FARM, NAPPAN, N.S.

REPORT OF THE SUPERINTENDENT, W. W. BAIRD, B.S.A.

THE SEASON, 1916-17.

During the first part of the winter of 1915-16 the weather was unsettled. The ground remained bare until well on in January. A heavy snowfall was experienced during the latter part of January, February and March, thus providing a protective covering for all crops at the period when most required. The snow disappeared gradually, preventing any excessive washing or flooding of the ploughed fields. Because of light rains and high temperature during April and May, farming operations were started some thirteen days earlier than in the previous season. This was a great help to the farmers, as there was much ploughing to be done, since the exceptionally wet fall of 1915 prevented as much work being accomplished along these lines as usual.

Most grain was seeded by the end of May. Vegetation made fair growth. June was less favourable for planting, having eleven rainy days recording a total precipita-

tion of 4·74 inches. Excessive moisture in the soil during this period retarded the growth of grain; barley suffered the most. July and August were good growing months, and all crops made excellent progress. Hay was stored in first-class condition, and ideal harvest weather continued during September. The season was exceptionally good for the growth of corn; better than for some seasons past. The temperature was low and the precipitation heavy for October. The rain was beneficial in softening the ground for ploughing operations. November was unfavourable for the harvesting of roots; many experienced much difficulty in getting them stored in good condition. December and January were mild, with light flurries of snow towards the end of the latter month. Heavy snowfalls were experienced in February and March.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature.		Precipitation.			Total Sunshine.
	Highest	Lowest	Rainfall.	Snowfall.	Total.	
	°	°	Inches.	Inches.	Inches.	Hours.
1916.						
April	57	24	1·63	5·00	2·13	142·60
May	70	26	2·42	.....	2·42	186·20
June	77	32	4·74	.....	4·74	180·50
July	85	39	2·60	.....	2·60	217·30
August	85	37	1·70	.....	1·70	247·30
September	80	31	1·64	.....	1·64	170·80
October	75	20	5·55	.....	5·55	132·80
November	60	3	1·22	11·00	2·32	96·80
December	55	2	2·71	12·00	3·91	61·60
1917.						
January	45	−23	1·68	17·00	3·38	98·70
February	41	−16	1·44	14·00	2·84	122·00
March	56	− 7	0·90	12·00	2·10	166·30
Total for year	.....	.....	28·23	71·00	35·33	1,822·90

LIVE STOCK.

Horses.—Thirteen horses are kept on the Nappan Farm at present, made up of ten heavy draught, including four pure-bred Clydesdale mares, and three lighter horses suitable for express, cultivating, light harrowing, etc.

Experimental work has been commenced on the feeding of horses, while on light and on heavy work, and when idle. Data are also being gathered on the cost of raising colts.

Dairy Cattle.—The "grading-up" experiment has now completed its fifth year. The object of the work is to show the value of using a pure-bred sire on the average dairy stock of the country. The work so far has given satisfactory results, but has not yet been continued long enough for definite conclusions to be drawn, and the low percentage of heifer calves dropped thus far has been a drawback. The great advantage, if not necessity, of the proper and liberal feeding of dairy cattle has been very clearly brought out in connection with this experiment.

Beef Cattle.—Owing to the general decrease in production and finishing of good beef cattle, the work in this line was increased at the Experimental Farm this year.

Thirty-four steers, well-bred Shorthorns of beef type, were purchased locally in November, 1916, at $6.65 a hundred pounds. They were sold on March 27, 1917, at

$10 a hundred. The average profit per steer for the eighty-eight days' test was $36.14; average weight at beginning, 1,052·7 pounds; at finish, 1,221·6 pounds; an average increase of 168·9 pounds.

The plan of experiment and the comparative results obtained are shown in the following table, in which is a summary of eight lots fed, giving the main points of interest for comparison:—

	How Housed							
	Steers tied in barn.			Steers loose in box stall in barn.			Open Shed.	
	Feed.			Feed.			Feed.	
	Lot 1	Lot 2	Lot 3	Lot 5	Lot 4	Lot 6	Lot 7	Lot 8
	Roots and meal.	Roots, ensilage and meal.	Ensilage and meal.	Roots and meal.	Roots, ensilage and meal.	Ensilage and meal.	Oats, meal in mixture	Corn, meal in mixture
Number of steers	4	2	2	2	4	2	9	9
Average weight of steer at start lb.	1,253	1,176	1,202	1,068	1,090	1,012	928	1,016
Daily rate of gain per steer lb.	1·96	1·46	1·56	1·61	1·84	1·64	1·90	2·158
Cost of one pound gain cents	9·37	12·59	11·77	11·34	9·96	11·10	9·44	8·51
Cost of feed per steer per day. cents	18·39	18·39	18·39	18·30	18·39	18·30	18·01	18·37
Profit per steer $	43·08	36·08	37·85	33·88	36·58	32·32	32·05	36·93

Sheep.—A flock of Shropshires is being built up at Nappan, and now consists of eighteen ewes and two rams. The lamb crop of 1916 was a fairly good one. The ewes will be kept in the flock, and the rams sold as breeders.

A grade flock has also been established, with the view of carrying on a grading-up experiment, using a pure-bred Shropshire ram on the grade ewes.

Swine.—Two breeds are kept at Nappan, namely, Berkshires and Yorkshires, the total number on hand March 31, 1917, being fourteen. This year the Yorkshires did better than the Berkshires. In both cases, all suitable young pigs were sold for breeding purposes.

Ten 1-year-old grade Yorkshire and Berkshire sows were purchased in March to start a grade herd. The stock from these will be used for experimental work in feeding, to demonstrate the use of self-feeders vs. hand feeding; also the profit to be realized from pork production.

POULTRY.

The experimental work with poultry was somewhat disorganized this year owing to difficulty in obtaining a competent poultryman.

The cold and backward spring made hatching and rearing very difficult. The obtaining of early-hatched pullets, so necessary to egg-production the following winter, is one of the greatest poultry problems in this district.

Four breeds were kept during the past year, namely, Barred Rocks, 77; White Wyandottes, 70; White Leghorns, 57, and Rhode Island Reds, 27, a total of 231 birds.

Six incubators were used, three Prairie State, two Nonpareil Tamlin, and one Cyphers. The average percentage of fertile eggs for each breed was: Barred Rocks, 85·7 per cent; Wyandottes, 57·9 per cent; Rhode Island Reds, 54·8 per cent; and Leghorns, 84·0 per cent.

In tests for winter egg production, it was found that the cost per dozen eggs was considerably lower for the pullets than for the hens in most cases.

BEES.

Rainy weather during June and July lessened the honey flow very materially, the average production per colony being only 26·14 pounds, as against 178·6 pounds the previous year.

Fifteen strong colonies were put into the bee cellar in the fall of 1916, and a comparison of different stores for wintering was carried on, using: (1) sugar syrup only; (2) half sugar syrup and half clover honey; (3) half sugar syrup and half golden-rod honey; (4) golden-rod honey; and (5) clover honey. The hives wintered on clover honey came through in the best condition.

A demonstration hive was taken to all the exhibitions and attracted much interest.

FIELD HUSBANDRY.

Rotations.—Three rotations are being operated at the Nappan Farm, namely:—

Rotation "B" (five years): First year, roots, or corn; second year, grain seeded down; third year, clover hay, fall ploughed; fourth year, grain, seeded down; fifth year, clover hay, ploughed in autumn.

Rotation "C" (four years): First year, roots or corn; second year, grain, seeded down; third year, clover hay; fourth year, pasture, fall ploughed.

Rotation "D" (three years): First year, roots or corn; second year, grain, seeded down; third year, clover hay, ploughed in autumn.

Rotations "B" or "D" are most suitable where plenty of rough pasture is available. "C" is an excellent rotation for a dairy farmer or any one keeping a large herd with insufficient pasturage.

Crop Yields.—The total area in grain, including test plots, was 18 acres, of which 3 acres were in wheat, 8 in oats, 5 in mixed grain, and 2 in barley. The average yields were: 26 bushels 56 pounds, 45 bushels 18 pounds, 25 bushels 8 pounds, and 7 bushels 38 pounds, respectively. The barley was practically a failure, due to unfavourable weather conditions during the early part of the season.

In roots and potatoes there were 12⅛ acres, including test plots; 7⅜ acres in turnips; 3 acres in mangels; 1½ acres in potatoes. The average yields were: 696 bushels 3 pounds, 476 bushels 43 pounds, 305 bushels 20 pounds, respectively.

FERTILIZER EXPERIMENTS.

A comparison is being made between plots receiving one or two fertilizing elements and a complete fertilizer, in order to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profits. Another series of experiments seeks to discover the relative efficiency of different sources of nitrogen and phosphoric acid; different plots receiving different rates of nitrate of soda or sulphate of ammonia for the nitrogen and acid phosphate and basic slag, acid phosphate alone, basic slag alone, or bone meal for the phosphoric acid. The experiment with seaweed fertilizer was continued. Four plots to be planted to potatoes were used; two receiving manure alone, the other two manure and seaweed fertilizer. An average increase of 26·8 bushels per acre was noted on the plots receiving the application of seaweed fertilizer.

CEREALS.

Thirteen varieties of spring wheat were tested in duplicate plots of one-sixtieth acre each, the highest yield being obtained from Huron, 39 bushels 53 pounds; the lowest was White Fife, 22 bushels 45 pounds.

In twelve varieties of barley tested, Canadian Thorpe was highest with a yield of 39 bushels 18 pounds per acre, and French Chevalier lowest with a yield of 21 bushels 12 pounds.

Thirteen varieties of oats were tried. Pioneer gave the highest yield, 63 bushels 18 pounds per acre; and Daubeney the lowest, 35 bushels 10 pounds.

Four varieties of buckwheat gave yields ranging from 26 bushels 32 pounds per acre for the Rye variety to 14 bushels 8 pounds for Silverhull.

In six varieties of field peas, Golden Vine yielded best, 11 bushels 20 pounds per acre; and White Marrowfat lowest, 4 bushels.

Field Crops of Seed Grain.—Fourteen acres were sown in acre and two-acre lots of wheat, oats and barley, for seed grain. The barley was almost a failure, due to excessive moisture. The wheat yielded from 28 bushels 48 pounds to 23 bushels 10 pounds per acre; the oats from 54 bushels 27 pounds to 37 bushels 13 pounds per acre. The greater portion of the seed obtained was thoroughly cleaned by use of the fanning mill and hand-picking, and was sold in limited quantities to farmers desiring a pure strain of selected seed.

FORAGE PLANTS.

Fifteen varieties of Indian corn were sown in duplicate plots of one one-hundredth acre each. The highest yield was obtained from Salzer's North Dakota, 21 tons 1,000 pounds; and the lowest from Free Press, 11 tons 750 pounds. Over a period of five years, the Longfellow variety, with an average yield of 14 tons 1,559 pounds, has proven as reliable a variety for the Nappan district as any so far tested.

Among twenty varieties of turnips, Best of All gave the highest yield, 30 tons 1,150 pounds per acre; and Lapland the lowest, 22 tons 500 pounds.

Sixteen varieties of mangels ranged in yield from 12 tons 1,000 pounds for Yellow Leviathan to 6 tons 1,700 pounds for Golden Tankard.

Six varieties of carrots were tested, the highest yield being obtained from Improved Short White, 17 tons 450 pounds; and the lowest from Orange Giant, 14 tons 650 pounds.

Three varieties of sugar beets yielded 5 tons 1,650 pounds, 5 tons 600 pounds, and 4 tons 750 pounds, respectively.

An experiment was begun to ascertain the possibility and profit of producing field-root seed. A quantity of turnips and mangels was selected in the fall of 1915 and stored in pits for the winter. The loss through decay was almost negligible. The roots were planted out June 5 and 6. During the season the plantation was injured by sheep breaking in, so no data as to yield are available, but the possibility of producing good-quality seed was established.

Imported seed of mangels and turnips was tested against Canadian-grown seed of the same varieties. The latter gave better yields in all cases. This test will be continued to get the results of several years' tests.

Grasses and clovers.—Three rows of Grimm's alfalfa were sown June 16. Growth was good throughout the season, but it winter-killed about 75 per cent.

HORTICULTURE.

Fruits.—Tree fruits were somewhat below the average, and much more scab was in evidence, owing to weather conditions having interfered with spraying. Small fruits gave fair returns.

Vegetables.—In addition to the tests of varieties carried on each year, the work of endeavouring to improve the strain of a few of the best varieties of potatoes was continued, the same sorts as in previous years being used, namely, Irish Cobbler, Carman No. 1, Wee McGregor, Empire State, Rawlings Kidney and Green Mountain. A marked improvement is being noticed, the yields from the selected seed being considerably heavier than from the unselected.

Ornamental gardening.—The ornamental trees and shrubs made very good growth. The eighteen hedges of different kinds did well, and are now excellent specimens. The common spruce hedge is undoubtedly a beautiful one, and can be planted at little cost. Nothing adds more to the appearance of the farm home than a well-kept hedge.

The new perennial border was so arranged that the annuals are intermixed with the perennials, giving a continuous and attractive bloom from early spring to late fall.

FARM IMPROVEMENTS.

Buildings.—The old sheep barn was remodelled into an up-to-date bull-and-calf barn, the Rutherford system of ventilation being installed, and more light arranged for. The building is 32 by 63 feet. The old, loose stone wall was replaced by a good cement foundation. Inside, the building was divided into halves with a 5-foot passage through the centre, a floor of cement laid on a good foundation of 6 inches of stone, and the walls and ceiling sheathed with ⅞-inch matched lumber.

On the north side, six bull box-stalls were strongly built of 2-inch dressed lumber, with grated fronts and doors opening to the north into the yard, which will later be fenced in specially for bulls. Five of the box stalls are 9 feet 2 inches by 12 feet, and one is 15 feet 2 inches by 13 feet. Partitions between pens are 7 feet high; windows 2 feet by 2 feet light each pen.

On the south are six calf pens, 9 feet 2 inches by 11 feet 6 inches, with partitions 4 feet 6 inches high between. The fronts of pens are finished with calf-pen stanchions. Light is admitted through large windows on the south, thus making ideal pens for young calves. The building has been rewired for electric lights and painted on the outside to match the rest of the stables. This adds greatly to the general appearance of the stables.

A rough shed for feeding steers was erected on the hillside just east of the main barn, 20 feet by 40 feet south. This shed has 7-foot posts in front and 5-foot posts at the back. It was single boarded, battened, and divided into two pens, 20 feet by 20 feet each, by a plank partition. A long trough was built at the back running the full length of the shed, with a shutter opening in from the north side for feeding stock. The roof was single boarded, covered with paroid roofing. One window 2 feet by 3 feet lights each pen from the south. Doors 4 feet by 6 feet 6 inches open into the yard on the south.

Electric Light System.—The system was installed in 1914, and was this year extended up to the new sheep barn, making it much more convenient for looking after the stock. The new bull and calf barn was rewired to suit the remodelling of the building.

Fencing.—All line fences, which have been up for some twenty years, were gone over and repaired. Around the wood lot a roadway of 20 feet was cut out in the winter and spring of 1917 to make way for the erection of a new fence, as the old one had outlived its usefulness. Over 8,000 poles were cut and hauled to place during the winter.

Clearing New Land.—The clearing of new land by prisoners of war was continued during the year, the work starting on the 25th day of April and proceeding throughout the season, as the weather permitted, until the 19th of January. Some 35 acres were chopped out of forest. The brush was piled and burned before stumping started. All timber cut was manufactured into wood and props. A total of 41 acres was stumped, piled, and levelled with pick and shovel, making it ready for the plough.

This ground was very much more difficult to plough than was the first 26 acres, as the stumps were much larger, ranging in size from 3 inches to 36 inches in diameter, were mostly of hemlock, hardwood, spruce, and fir, and were very numerous. Two kinds of stumping machine were used, the Improved Logan stumper and the Kirstin one-man stumper. The latter machine gave us better satisfaction for all stumps up to 12 inches. The former has the greatest power, but will not stand the wear and tear so well and, consequently, it costs more to keep it in repair.

Water System.—The new system laid last year is giving great satisfaction, and has plenty of force. The line branching off from the main pipe to the watering trough in the yard was changed, being run out into the centre of the yard instead of up against the side as it was previously. Here a circular cement trough was built, with an overflow pipe into the drain in the ravine. An underground shut-off was put in the water line in order to prevent freezing during cold weather.

Barnyard.—The old barnyard was cut down about a foot deeper, and the earth thus removed was wheeled over to a ravine just east of the yard, which was some 5 to 6 feet deep. In the ravine a large 18-inch drain was built, mostly of cement tile, making a good drain to carry all surface water from the yards and fields above. Then the ravine was filled level with the main barnyard. Two 6-inch tile drains were laid from the main barn to the large drain in the ravine. This carried off all surplus water from the buildings. Along in front of the cow stable the large stone taken from the wall of the old sheep barn was laid, making a solid stone walk 8 feet wide along the entire front of the stable. The remainder of the yard will be stoned and gravelled next season, thus making a clean yard for the dairy stock, which will be a great improvement over the old yard that was frequently very muddy.

Roadmaking.—As much time as could be spared from farm work was given to improving the public highway north and south of the Farm, more especially with the use of a split-log drag. Likewise the main driveways of the Farm were kept in good condition throughout the year. The main driveway which runs east and west through the centre of the Farm was straightened out and made 20 feet wide back to the second brook, making a good road for either wagons or autos, and a good cement culvert was made over the first ravine, enabling the road to be graded up some 3 feet higher. This road will be continued to the newly cleared area next season.

MEETINGS ATTENDED.

During the year the superintendent attended and gave addresses at the following agricultural meetings: Nappan school, June 21; Cumberland County farmers's picnic held at the Farm, July 19; visited seaweed experiments throughout Cumberland County; August 15; visited flax fields in Pictou County, August 28-29; judged field crops in Cumberland County, September 1 and 2; Halifax exhibition, September 21; judging school gardens, Little River, Mansfield, and Leicester, September 25; Stewiacke exhibition, September 27 and 28; Port Elgin exhibition, October 3 and 4; Sackville exhibition, October 11; Apple show in St. John, November 1; judging at Nappan school exhibition, November 10; Agricultural meeting at Southampton, December 1; Moncton poultry show, December 11-15; Potato show at Woodstock, December 26-28; Truro short course, January 8; Kings County farmers' rally at Kentville, January 10; Nova Scotia Farmers' Association at Amherst, January 23-26; New Brunswick Farmers' and Dairymen's Association at Fredericton, January 29 to February 2; Short course at Sussex, February 5-7; Short course at Woodstock, March 12-15; Chatham short course, March 19-22.

EXHIBITIONS.

An exhibit of farm produce grown at Nappan, also of model, etc., was staged at Halifax, September 13-21; Antigonish, September 19-20; Stewiacke, September 25-27; Sydney, October 3-6; Arichat, October 10-11; Port Elgin, October 3-4. Arrangements were made to put one up at Musquodoboit and Guysborough, but owing to the delay of exhibit by rail it arrived too late at the latter places.

EXCURSIONS AND VISITORS.

Five excursions were held at the Farm during the season; a great many small parties also visited the Farm. The approximate number of visitors during the year was 2,350.

EXPERIMENTAL STATION, FREDERICTON, N.B.

REPORT OF THE SUPERINTENDENT, W. W. HUBBARD.

THE SEASON.

After a very mild November and December in 1915, with a heavy rainfall in the latter month, and about two inches of snow on the ground after the 9th, January followed with continued mild weather and only about five inches of snowfall. The fields, in fact, were practically bare, and there was just enough ice on the roads to make passable sleighing. February, however, was colder than the average, with a snowfall of 25·8 inches. Thawing weather took off most of it, and the end of the month saw many bare spots in the fields, with more or less ice over considerable areas. March was a cold month, the mean temperature of 19·8 degrees being 6 degrees below the average. The snowfall was 18·8 inches, with no rain whatever. The ground was thus well protected until, on the 28th of the month, a warm wave took off every vestige of snow. Fortunately, April was cloudy with no severe frost or hot sun to kill the exposed roots. It was also the driest April on record, and there was practically no start in vegetation until May. May was also dry, with a mean temperature of 50·2 degrees and only three slight frosts in the early part of the month. There seemed to be an abundance of moisture in the land, however, and growth was good. The first half of June also gave favourable weather, though more sun and heat would have given more rapid growth, but the latter half brought a deluge, the rainfall being 6·12 inches in thirteen days, and more or less crop was damaged by flooding and washing. Turnip seeding that would otherwise have been finished by the 20th June had to go over into July. This latter month brought very favourable weather, with precipitation and temperature slightly above the average. August, with a mean temperature of 66·1 degrees, was 3·1 degrees warmer than the average and, with only 1·59 inches precipitation, had less than half the average rainfall. September followed warm and dry, and October, while comparatively cool, was a most favourable month for harvesting and farm work generally. So far, therefore, as weather conditions went, the season was, on the whole, very favourable for crop production. Clovers and grasses came through with very little winter-killing, and started strong. August and September were rather warm for the best growth and development of potatoes and root crops, though unusually favourable for corn.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature F.		Precipitation.	Total Sunshine.
	Highest.	Lowest.		
1916.	°	°	Inches.	Hours.
April	64	19	1·41	169·25
May	76	30·5	2·91	203·6
June	81	37	6·12	139·45
July	93·5	40	3·96	215·6
August	92·5	49	1·59	235·35
September	81·5	33·5	2·95	157·25
October	80	22	3·6	151·85
November	64	− 4	2·52	88·6
December	45	−10	3·02	77·1
1917.				
January	34	−22·5	4·01	119·55
February	38·5	−19	2·9	129·2
March	47·5	− 5	2·27	159·81
Total for year			37·26	1,846·6

LIVE STOCK.

Horses.—Ten draught mares, two geldings, and two general-purpose mares have been kept busy on the Station work all through the year, with the exception of the geldings which were laid off from December 1 until March 31. One of these, at a food cost of $10.30, from January 1 to March 31, lost 110 pounds in weight. The other, at a food cost of $9.35 for the period, lost only 35 pounds in weight. The cost per horse for feed while at hard work during the period December 1 to March 31, was $32.50. The average daily ration was 9·9 pounds grain, 18 pounds hay, and 3 pounds roots.

Two colts, a grade Clyde gelding and a grade Percheron filly, have been raised to three years old and a weight of 1,400 pounds at a food cost of $96.95 each. They are thoroughly broken, and are worth, on the present market, from $200 to $225 each.

Dairy Cattle.—The three pure-bred herds of Shorthorns, Ayrshires, and Holsteins are gradually increasing, and the grade herd as the young half-bred grade heifers are coming on, is being reduced. Every individual in the grade milking herd made a profit last year over cost of feed, the variation being from $69.29 down to $26.08, milk all made into butter, which sold at 35 cents per pound, and no credit given for calf.

Beef Cattle.—Thirty steers were bought in September and October at a cost of 6·17 cents per pound. They were sold on March 17 at 9·5 cents per pound. It was found more profitable to feed 4 pounds of grain per day than 6 pounds, and ensilage alone during the latter part of the feeding period gave greater gains than roots and ensilage combined. A substantial profit was made this year in the feeding operations.

A feeding test, duplicated, with four lots of calves in each test, was conducted to determine the cost of rearing calves. On new milk a pound of gain cost 13·2 cents; on skim-milk and a home-mixed grain ration added, a pound of gain cost 6·7 cents; on calf meal and water, a pound of gain cost 14·8 cents; and on calf meal and skim-milk, a pound of gain cost 8·9 cents.

Sheep.—The flock of Shropshire sheep has done very well. They went into winter quarters very fat after fall feeding on rape, received a small grain ration after January 1, and began to drop lambs in February. At six weeks old the lambs are weighing from 40 to 50 pounds each.

POULTRY.

The stock kept includes 80 Barred Rocks, 101 Rhode Island Reds, 90 White Leghorns, and 78 White Wyandottes. The number of eggs laid during the year was 28,056. Breeding pens made up from the best laying pullets were mated to cockerels imported from the leading breeders in the respective breeds. The chicks raised numbered 1,589 from 2,432 eggs set. Early hatched pullets began laying in November.

BEES.

Three colonies of bees came out of winter quarters, and two swarms were taken off, and 38 pounds of honey removed. These five colonies were well fed with syrup in September to bring the weight of the hive up to about 80 pounds, and then packed in planer shavings inside the winter cases. Four colonies are alive this spring.

FIELD HUSBANDRY.

Owing to preliminary work, such as clearing, draining, breaking land, fencing, etc., being necessary, regular work with rotations and field cultural experiments has not yet been begun at Fredericton. Seventy-three acres were in grain and roots in 1916, and 38 acres in hay. The latter yielded at the rate of 2 tons 58 pounds per acre. One and one-quarter acres were sown to a mixture of peas, oats, and barley, and the crop cut green and fed to the cattle in the stable.

Fifty acres were seeded to oats; part of it was rough, newly-broken land where, on account of late seeding and the impossibility of getting a good seed-bed, the yield was only 15 bushels per acre. On well-cultivated land the yield was slightly over 50 bushels. The seed sown on the area was 185½ bushels, and the total yield 1,667½ bushels.

Arthur peas yielded 26 bushels per acre.

The yield of swede turnips averaged 520 bushels per acre, and the white turnips 923 bushels per acre. Four thousand pounds waste lime applied to 1 acre gave an increased yield over the un-limed acre beside it of 113 bushels.

Many varieties of turnips and mangels were tested in plots. The highest yield for swede turnips was 47 tons 640 pounds per acre from home-grown Kangaroo seed, and the average of twenty-three varieties was 33 tons 200 pounds per acre. The yield of twenty-three varieties of mangels averaged 28 tons 180 pounds per acre, and the highest yield was 41 tons 400 pounds per acre from Ottawa-grown Yellow Intermediate seed.

Twelve and three-quarter acres of Indian corn gave a weight, when freshly cut, of 15 tons 818 pounds forage per acre. When hauled to the silo after several dry days, the weight was 10 tons 1,513 pounds per acre.

Peas, oats and vetches gave 10 tons 1,500 pounds per acre of green feed. The crop from 4 acres was put in the silo and fed out during August, September and October.

FERTILIZER EXPERIMENTS.

One hundred and twenty plots of one-twentieth acre each were under fertilizer experiments. In one series where the three-year rotation was completed, it was found, among other data, that where 500 pounds of complete fertilizer per acre was used there was a greater net profit than where 1,000 pounds was used.

In field work, experiments both with fertilizer and with lime were made on corn and turnips. With 900 pounds 4-10 fertilizer per acre on corn for silage, an increase of 4 tons 392 pounds per acre was obtained, not quite sufficient, however, to pay the whole cost of fertilizer. Dried and ground seaweed at the rate of 1,500 pounds per acre gave an increase of 52 bushels and 40 pounds of potatoes when used with 1,000 pounds of 4-10 fertilizer; when used with 18 tons stable manure per acre the increase was 10 bushels and 40 pounds.

The addition of 4,000 pounds lime per acre on turnips gave an increased yield of 113 bushels. On other crops, on plot experiments, and even on alfalfa, lime gave negative results. These results are, of course, not conclusive, and the work must be continued for a series of years before reliable results may be hoped for.

CEREALS.

Five varieties of wheat were tested. Early Red Fife gave the highest yield, 18 bushels 45 pounds; and Red Fife the lowest, 12 bushels 8 pounds. Early Chevalier gave the best yield among the five varieties of barley tried, 24 bushels 3 pounds per acre; and Manchurian the lowest, 6 bushels 42 pounds. Of five varieties of oats, Banner yielded best, 36 bushels 22 pounds; and Daubeney lowest, 28 bushels 23 pounds per acre. Of five varieties of peas, White Marrowfat, the highest, gave a return of 15 bushels 30 pounds per acre; and Brittany, the lowest, 8 bushels.

FORAGE CROPS.

Ten varieties of flint corn, eight of dent, and three of sweet corn were tested. Additional plots of Quebec Yellow, Free Press, and Canada Yellow were grown from seed ripened at this Station in 1915.

The yield of ensilage per acre in tons varied from 14·38 tons for Yellow Flint (unnamed) to 2·38 tons for Bear Island Flint. The highest percentages of ripened ears, 64·9, was given by Free Press, the lowest by King Philip, none. In the dent, or ensilage varieties, Golden Glow gave the highest yield, 15·8 tons per acre, and Northwestern Dent the lowest, 8·9 tons, of ensilage.

The three varieties of sweet corn tried, Brannan Sweet, Golden Bantam, and Fordhook, all ripened fair crops.

Twenty-three varieties and strains of turnips yielded well in all cases, the highest being Kangaroo (Fredericton seed), with a yield of 47 tons 650 pounds per acre, and the lowest, Canadian Gem, 26 tons 700 pounds.

In twenty-two varieties and strains of mangels tested, Yellow Intermediate (Ottawa seed) gave the highest yield, 41 tons 400 pounds per acre, and Danish Sludstrup (commercial seed) the lowest, 21 tons 250 pounds.

Three varieties of sugar beet gave an average yield of 16 tons 1,333 pounds per acre.

Among six varieties of carrots grown, Ontario Champion, the highest, gave a yield of 28 tons 500 pounds, and Orange Giant, the lowest, 16 tons 1,600 pounds.

In the forty-five plots of clovers and grasses, there was considerable winter-killing, especially of meadow fescue, sheeps' fescue, perennial rye grass, and red clover. Alfalfa also winter-killed badly. The value of alfalfa for this district has not yet been proved.

Growing Turnip Seed.—In the autumn of 1915, four thousand roots of the Invicta variety of swede turnips were packed in a cellar with sand, care having been taken not to injure the crown of the turnip nor to remove any of the roots.

While the outside of this pile of roots kept well, it was found in the spring that the roots in the interior had spoiled; consequently, only about 10 per cent of the

number stored were fit to plant, and these did not all grow. A very good quality of seed was obtained, and in the autumn of 1916 roots from the same variety were stored in crates holding six bushels each. These have apparently kept perfectly, and will be planted for seed production.

HORTICULTURE.

Fruits.—There are now 872 trees in the young orchards, namely, 651 apple, 125 pear, 72 cherry, and 24 plum trees. In the commercial orchard, 30 trees were added during the year.

Winter-killing has so far been severe, 25·17 per cent of the original orchard trees planted having been killed since 1914.

The crop in the old apple orchard was light, but of fair quality.

In small fruits, all varieties did well. Thirty-one sorts of currants, eighteen of gooseberries, eleven of raspberries, and twenty-one of strawberries were under test.

Vegetables.—Variety tests were carried on with asparagus, beans, beets, Brussels sprouts, cabbage, carrots, cauliflower, celery, corn, cucumbers, lettuce, muskmelon, onions, parsnips, peas, radish, squash, tomatoes, and potatoes. Beans were badly attacked by anthracnose, and cauliflower by bacterial soft rot. With these exceptions, all vegetables did well.

Eight and one-half acres of potatoes were grown, all but 1 acre being devoted to varietal, cultural, pathological, or spraying tests. The remaining acre was handled commercially to get data on cost of production. The total cost for the acre was $89.02, including seed, rent, cultural operations, and depreciation of machinery. The yield was 330 bushels of marketable potatoes and 16½ bushels cull. The total value of the crop, at market prices at harvesting time, was $333, and the profit $243.98.

One hundred and sixteen varieties and strains of potatoes were under test. Work in selection of seed was carried on, also cultural tests such as planting at different distances apart, level vs. hill planting, number of eyes to a set, spraying mixtures, etc.

Ornamental Gardening.—Groups of trees and shrubs were set out on the grounds in the fall of 1915. These wintered well. The perennial borders bloomed freely, as did the annuals. The specimen hedges planted in 1915 made excellent growth.

FARM IMPROVEMENTS.

Buildings.—The pumping station, burned in 1915, was replaced by a concrete building, covering the old site with an ell added to include the new well. Concrete blocks, 4 inches thick, were used, placed to leave a dead-air space of 3 inches. It was aimed to make this building as nearly fire-proof as possible, so the roof was covered with asbestos slate shingles. The total cost was $3,648.36, including repairs to pneumatic tank and necessary shafting, belting, piping, etc., for power plant.

A concrete foundation was placed around the weigh scales, and a house built upon it with boarded and battened walls and steel roof, at a total cost of $228.52. A colony poultry house 8 feet wide by 12 feet long, and a poultry feed storehouse 12 feet wide by 18 feet long, were also built at an approximate cost of $150.

Fencing and draining.—No permanent fencing was undertaken during the year. Temporary fencing with both woven wire and barbed wire to keep the stock back as new land was being cleared, did not involve much expenditure, as outside of a few stretching posts only light stakes driven with a maul, were used.

Drainage was proceeded with where most needed. One thousand rods of drains were made, of which 760 rods were laid with tile, 166 rods with stone, and 74 rods of open drains.

The removal of the sides of 60 rods of open ditching was done with team and scraper to form a swale for surface drainage. Wherever possible the underdrains

were filled by horses and scraper. The total expenditure for all this work was: for labour, $1,744.84; and for tile, $328. Besides the above, 6 acres of newly broken land, when ploughed the second time, was thrown up into 30-foot ridges, and the dead furrows cleaned out to give surface drainage.

Clearing land.—Stumps were removed from 10 acres, a portion of them burned, and this part well ploughed. Boulders were blown out, broken up, and removed from land previously stumped and cropped. Over one hundred tons per acre of stone were taken off one area of 6 acres, and used to make a driveway across a gulch. A half-mile of road-sides was cleared of stumps and boulders, the land smoothed and seeded. The total expenditure on this work was: for labour, $1,715.95; and for stumping powder, $365.98.

Roadmaking and grading.—Some progress was made in preparing the land for lawns and in laying stone foundations for roads through the lawns. Stones and boulders were removed, where necessary, from the 6 acres under preparation, and those that could be broken were placed along the road lines; the other stones were taken to the river bank. The road lines were scraped out to a depth of 15 inches and a width of 15 feet. Stones were placed in these sufficient to give a broken-stone foundation at least 1 foot in depth. Some ditches were cleaned out along highways crossing the Station property, and grading was done both on the highways and on some of the farm roads.

EXHIBITIONS.

As no fall exhibitions were held in the larger centres in New Brunswick, the Experimental Farms' exhibit was not sent out over a circuit of fairs. An exhibit of fruit, potatoes, and seed corn was made in November at the New Brunswick Fruit Growers' Association display at St. John, and a showing of potatoes, seed corn, and seed grain was made at the New Brunswick Potato Growers' Association Exhibit at Woodstock in December. In January at the Provincial Seed Fair at Fredericton, an exhibit of potatoes, corn, and grain was made by the Experimental Station.

At all the above fairs, literature was distributed and names taken for the mailing list.

SHORT COURSES AND MEETINGS.

The superintendent acted as instructor in Animal Husbandry, and some crop-growing subjects at the Short Courses held at Woodstock, Sussex, and Chatham during the winter, and addressed the Potato Growers' Convention at Woodstock in December, as well as attending meetings in conjunction with Prof. J. W. Mitchell of the Provincial Agricultural Department at New Denmark, Andover, Centreville, Hartland, Bathurst, Nappan, and Doaktown.

EXCURSIONS.

Three excursions came to the Station during the year. On the 23rd August the Farmers' and Dairymen's Association of New Brunswick arranged for a summer meeting here, and between twelve and thirteen hundred people came. Arrangements were made to give all, who wished it, a mid-day lunch, and addresses were given by the Director, the Dominion Animal Husbandman, the President of the Farmers' and Dairymen's Association, and the Superintendent of the Station.

In September, between three and four hundred Normal School students visited the Station, and in February three hundred and fifty members of the Farmers' and Dairymen's Association, attending their annual meeting in Fredericton, spent a day at the Station to take live-stock judging work, when a mid-day meal was provided for them, and in addition to the judging work, addresses were given by Messrs. E. S. Archibald, W. W. Baird, G. C. Cunningham, and the superintendent.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIÈRE, QUE.

REPORT OF THE SUPERINTENDENT, JOS. BEGIN.

The winter of 1915-16 was colder than the average, with a somewhat lighter snowfall. The snow disappeared early in March. April was dry and cool with high winds, which dried the soil sufficiently to permit of seeding commencing on the 27th. Good seeding weather continued until May 10, but the weather then turned cool, with frequent rains, and continued so during the rest of May and most of June. Seeding was consequently delayed and growth slow until towards the end of June.

July and August were extremely dry, while the next two months were very wet. No damaging frost was recorded from May 1 to September 20, which is unusual for this district.

Hay was a good crop; other crop yields were lessened by the dry weather of July and August. Potatoes were especially affected.

Considerable fall ploughing was done in September and October, in spite of the dry condition of the soil.

Snowfall in 1916-17 has been abundant, and the soil has been well protected.

Month.	Temperature F.				Precipitation.	Sunshine.
	Date.	Maximum	Date.	Minimum	Inches.	Hours.
1916		°		°		
April	25	61·2	3	18·4	0·94	218·1
May	29	77·4	3	30·0	3·47	186·2
June	14	81·0	2	39·4	5·18	170·4
July	25	91·7	3	53·0	1·89	286·4
August	21	92·4	6	43·0	0·75	237·1
September	9	89·4	18	35·2	3·07	143·6
October	4	73·2	12	22·2	5·66	125·2
November	9	59·2	24	− 1·1	2·43	64·2
December	3	44·8	31	−14·7	4·32	71·5
1917						
January	.....	38·6	.....	−28·2	3·10	278·0
February	.....	34·4	.....	−19·0	2·40	288·0
March	.....	44·6	.....	8·2	3·88	370·0
Totals	.....	.....	.....	.....	37·09	2,438·7

LIVE-STOCK.

Horses.—The five teams of draught horses were kept constantly employed on farm work, clearing land, hauling stone, and gravelling roads. A driver is also kept for light work, carrying mail, etc. An experiment in the cheap wintering of horses was carried on.

Cattle.—The herd number sixty head in all, partly pure-bred Ayrshires and the best Ayrshire grades.

Sheep.—A pure-bred flock of Shropshires is kept, and also a flock of common ewes, which are being used in a grading-up experiment. The flock was cheaply wintered, being fed almost entirely on hay, oat straw, and roots; very little grain was

given until near lambing time, when a little bran and oats were fed and the roots reduced. The lamb crop has been a good one so far, eighteen ewes having dropped twenty-nine vigorous lambs.

Swine.—The Yorkshire is the breed kept, and the bacon hog is the type aimed at.

POULTRY.

Work with poultry was commenced with 100 Wyandottes. The flock has now been increased to 200. Incubation results last spring were fair.

BEES.

The apiary consists of thirty-five hives of common bees and Italians. Experimental work is carried on in wintering inside and outside; fall and spring feeding, increasing honey production, and preventing swarming. The average yield of honey per colony was 120 pounds, with a highest yield of 272 pounds and a lowest of 63 pounds.

FIELD HUSBANDRY.

Rotations.—Three rotations are being tried at the Ste. Anne Station:—

Rotation "D" (three years). First year, hoed crop; second year, grain, seeded down; third year, clover hay, two cuttings if possible.

Rotation "C" (four years): First year, hoed crop; second year, grain, seeded down; third year, clover hay, two cuttings if possible; fourth year, mixed hay; land ploughed in August, well cultivated and ridged up in fall.

Rotation "A" (five years): First year, hoed crop; second year, grain, seeded down; third year, clover hay, two cuttings if possible; fourth year, mixed hay or pasture; fifth year, grain, seeded down. Clover allowed to stand until next spring, when it is ploughed under in preparation for roots.

Crop yields.—The yields in 1916 from field lots of grain, Indian corn, hay, and roots were as follows: Corn for ensilage, 12 tons 1,145 pounds per acre; roots, 19 tons 1,845 pounds; wheat, 40 bushels 27 pounds; peas, 28 bushels 8 pounds; oats, 72 bushels 18 pounds; and hay, 2 tons 1,325 pounds.

Records of cost of production of all field crops grown are carefully compiled each year.

CEREALS.

Comparative tests of varieties have not yet been commenced at the Ste. Anne Station, owing to the necessary preliminary preparation of the land now going on. However, the varieties of wheat, peas, barley, and oats best suited to the district are grown on the Station each season, and a large quantity of pure selected seed was sold or distributed this year.

FORAGE PLANTS.

Fifteen varieties of forage corn were tested this season. In a three-year test, Longfellow and Compton's Early have proved the best suited to the district. Of twenty-five varieties of forage beets, Yellow Intermediate and Long Red gave the highest yields. In sugar beets, Vilmorin's Improved and Klein Wanzleben yielded best. Fifteen varieties of turnips and five of carrots were also tested.

HORTICULTURE.

Orchards and Small Fruits.—The orchards now contain 1,045 trees, namely, 736 apple, 209 plum, 81 cherry, and 19 pear trees. The varieties represented are 122 apple,

30 plum, 15 cherry, and 8 pear. The small fruit and vegetable tests are carried on between the rows of trees in part of the orchard; and in the remaining part, orchard cover crops and cultural methods are compared.

Among the small fruits under test are: currants, 29 varieties, raspberries 8, gooseberries 7, and strawberries 18 varieties.

In vegetables, variety tests were conducted with beets, beans, peas, corn, cabbage, potatoes, lettuce, parsley, carrots, oyster plant, onions, cauliflower, celery, radish, cucumbers, pumpkins, squash, turnips, tomatoes, and muskmelons.

Twenty-five varieties of potatoes were grown and compared. This will be repeated for five years, when it is hoped that some valuable conclusions can be drawn. Records were kept of the cost of growing an acre of potatoes.

The total cost was $82.53. The yield was 203 bushels 54 pounds, making the cost of production per bushel, 40½ cents.

The display of flowers during the season was a good one, in spite of the drought. Ornamental trees and shrubs made satisfactory growth.

SPECIAL CROPS.

One one-twentieth acre plot of tobacco was grown; this matured satisfactorily, and was shipped to the Central Farm, Ottawa, for treatment.

FARM IMPROVEMENTS.

Buildings.—One hen-house, 16 by 32 feet, was built, and two colony houses. A number of repairs were made to other buildings.

Draining and Fencing.—Eighteen acres of land were tile drained, and 1,340 loads of stone gathered. Over 100 rods of fencing was put up, and the gravelling of the farm roads was completed.

EXHIBITIONS.

An Experimental Farms' exhibit was shown at Montmagny and at seven county fairs. The display attracted much attention; eighteen hundred applications to be put on the mailing list were received.

MEETINGS.

The superintendent, in addition to being present at eight exhibitions and fairs, took part in the Short Course given at the Ste. Anne College of Agriculture, and spoke at four farmers' conventions.

VISITORS.

Over 3,500 farmers visited the Station during the year.

EXPERIMENTAL STATION, CAP ROUGE, QUE.

REPORT OF THE SUPERINTENDENT, G. A. LANGELIER.

CHARACTER OF SEASON.

The months of May, June, July, August, September, and October were warmer, wetter and duller than the average of the last five years, the mean temperature being, respectively, 57·52 and 65·05° F.; the precipitation, 27·19 and 23·43 inches; the number of hours of sunshine, 1,073·4 and 1,109·7. The season was longer than usual without frost, the last one occurring on May 8 and the first one on October 10. Of the different crops grown in the district, hay was extra good; pastures excellent until the drought of midsummer; grain, poor; silage corn and roots, below the average; potatoes, poor; flax, good; tobacco, extra; apples, above the average; plums, a little below the average; strawberries and raspberries, the best in years; currants and gooseberries, extra; vegetables, about as usual; flowering plants, splendid. The main characteristics of the season were the wet spring, the drought of midsummer, and the fine autumn.

METEOROLOGICAL RECORDS, 1916-17.

	Temperature F.		Precipitation.				Total Sunshine.
	Highest.	Lowest.	Rainfall.	Snowfall.	Total.	Heaviest in hours.	
1916.	°	°	Inches.	Inches.	Inches.	Inches.	Hours.
April	63·0	17·2	1·12	6·00	1·72	0·80	190·8
May	75·0	31·2	6·36	.....	6·36	1·22	157·3
June	79·0	44·2	5·47	.....	5·47	1·70	165·8
July	91·0	45·2	3·96	.....	3·96	2·00	260·0
August	89·0	45·2	2·76	.....	2·76	1·00	223·2
September	77·0	32·2	3·22	.....	3·22	1·22	142·1
October	72·0	24·2	5·42	.....	5·42	1·05	125·0
November	63·0	− 4·1	3·23	5·60	3·79	1·02	64·9
December	40·0	−13·9	0·66	20·80	2·74	0·90	64·9
1917.							
January	37·0	−21·8	0·50	45·70	5·07	0·90	55·1
February	35·0	−21·8	.....	27·00	2·70	0·80	74·0
March	51·0	− 6·0	1·52	26·50	4·17	1·25	125·3
Total	.....	.....	34·22	131·60	47·38	.....	1,648·4

LIVE STOCK.

All the live stock kept in very good condition throughout the year.

Dairy Cattle.—The herd comprises forty-two head, thirty-six of which are pure-bred, and six grade, French Canadians. These cattle are kept for five purposes: supplying milk to the dairy, experimental breeding, experimental feeding, experimental housing, and to distribute good breeders at reasonable prices.

Milk production.—Ten cows from 3 to 11 years of age completed a lactation period between April 1, 1916, and March 31, 1917. They averaged 5,304 pounds of milk, testing 4·08, which is equivalent to 255·11 pounds of butter.

Experimental Breeding.—Out of nine grade cows bought for this purpose, only two were profitable producers; and none of their heifers, by a scrub, and also by a registered bull of unknown ancestry was worth keeping. This shows plainly that the scales and Babcock test should be used to find out the good producers, and that these must be bred to bulls out of profitable dams, if any headway is to be made.

Experimental Feeding.—There are two projects: the best quantity of concentrates for dairy cows, and the cost of raising heifers.

Best Quantity of Concentrates for Dairy Cows.—This experiment has now been made four years in succession, during five of the winter months. Animals are chosen of nearly equal weights so that the maintenance ration may be about the same for all, and they receive exactly the same quantity of roughages, such as hay, straw, silage, roots. The bedding is sawdust, and there are divisions in the mangers, so that each cow can only eat what she receives. When the animals are chosen, their previous records are considered, so as to avoid errors due to individual capacity as milk and fat producers. The average for four years shows that the lot receiving as much meal as would be eaten, which was 1 pound per 2·19 pounds of milk, gave a profit over feed of $16.10 in 148 days, the lot receiving 1 pound of meal per 4 pounds of milk gave a profit of $14, and the lot receiving 1 pound of meal per 8 pounds of milk gave a profit of $12.42. Feed was valued as follows: hay, $7 per ton; roots and silage, $2 per ton: meal, 1¼ cents per pound; whilst butter was calculated at 28 cents per pound, and skim-milk at 20 cents per cwt.

Cost of Raising Heifers.—Feed valuations are given so as to compare results of one year with another, as prices change very often: whole milk, $1.50, and skim-milk, 20 cents per cwt.; meal, 1¼ cents per pound; hay, $7; green feed, roots, silage, $3 per ton; pasture, $1 per month. The results of two years show that it cost, on an average, for feed alone, $27.44 to bring a heifer to 13 months and 4 days; $52.39 to bring one to 18 months and 10 days; $65.05 to bring one to 26 months and 1 day. The three whose feed was weighed until this last-mentioned time received, on an average, 1,028 pounds whole milk, 7,921 pounds skim-milk, 774 pounds meal, 3,774 pounds hay, 6,133 pounds roots, 5,933 pounds silage, 278 pounds green feed, and were 69 days on pasture. Their average weight was 775 pounds. With these figures, a farmer can see, at current prices, what it costs to raise a heifer; and when he does see this, he will no doubt commence to think that only the daughters of heavy producers should be raised if a profit is to be made.

Experimental Housing.—Buildings are non-productive and very costly. If most of the stock can be wintered in single-boarded sheds, profits are sure to be higher, because the extra feed required is more than counterbalanced by the better health of the animals. During the winters of 1915-16 and 1916-17, an aged bull, a 2-year-old, and a yearling have been outside—the first two mentioned during two winters and the latter during one winter—without the least sign of suffering. Cows were bred during the coldest spells, and the old bull certainly was a better server outside than he had been when kept in a box stall. Beginning in the autumn of 1917, all heifers will be kept in a single-boarded shed from the time they are about six months of age until within a few days of calving.

Selling Breeders at a Reasonable Price.—The three bulls used in 1917 are out of cows which have qualified for Record of Performance, and one of them has for dam and dam of his sire two cows which have that distinction. There are more French-Canadian cows, at this Station, that have qualified for the Record of Performance

than in any other herd. Out of such foundation stock it is wellnigh impossible not to breed good stock and it is practically certain that bulls from this Station will improve the herds wherever they may go.

Horses.—There are now twenty-four horses, including nineteen registered Freneh Canadians, four draughters, and a driver. They are kept for five purposes: work on the farm, experimental breeding, experimental feeding, experimental housing, and to distribute high-class breeders at reasonable cost.

Work.—During the year, each horse averaged about 150 full days of ten hours' work, leaving aside the unbroken colts. One must remember that seven mares dropped and raised foals, which cut down the number of hours of work.

Experimental Breeding.—Three projects are under investigation: raising fall colts, close breeding, work versus no work for brood mares.

Raising Fall Colts: If this is found feasible, the mares will have the full growing season to work. To throw some light on the subject, two mares were served to drop their young in October. At first, the youngsters did not seem to do very well, but they soon picked up, and on Mareh 31, 1917, a colt which was 5 months and 12 days old weighed 680 pounds, the average weight of his sire and dam being 1,285, whilst a filly which was 6 months and 2 days weighed 535 pounds, the average weight of her sire and dam being 1,200.

Close Breeding: A mare served by her son dropped a filly which is not doing as well as two others of about the same age from unrelated parents. A defect which both sire and dam had in common, that is, a rather rough head with a full throat latch, was intensified in the filly. This is a mooted question, and experiments will be continued, always with stock bred at the Station, so that there may be no question about the relationship of animals used.

Work versus no Work for Brood Mares: The same mare was used three years for this experiment. In 1914-15, she was worked carefully but all the time until she foaled; in 1915-16, she was kept idle in a box stall all winter, but worked about a month before foaling in the spring; in 1916-17, she was kept idle but outside, having a single-boarded shed where she could go in at will, and worked about a month before foaling in the spring. In each case, she dropped and raised a strong filly. It is probably better to work a mare carefully all the time before foaling, but a farmer who cannot do so, need not, for this reason alone, abandon horse raising.

Experimental Feeding.—This consisted in recording feed eaten by young animals, and by a team of workers. The following values are arbitrary, and can be changed according to current priees: whole milk, $1.50, and skim-milk, 20 cents per cwt.; molasses 3, wheat 2, oats 1·5, and bran 1 cent per pound; hay, $7 per ton.

Cost of Feed in raising Horses: At the above prices for feed, it cost $19.16 to bring a youngster to 10 months 7 days from the time it was weaned, at five months; $79.77 to bring one to 1 year, 9 months, 10 days; $138.89 to bring one to 2 years, 8 months; $162.05 to bring one to three years. The weights were, respeetively, 672, 1,138, 1,125, 1,300, which is much more than French-Canadian colts and fillies of the same age generally weigh. To enable anybody to calculate the cost at present prices it may be said that the 3-year-old received the following quantities of feed: 1,260 pounds of skim-milk, 16 oil meal, 86 wheat, 4,184 bran, 5,393 oats, 9,954 hay. This shows that only good stock must be used for breeding purposes, as it eosts a great deal to raise horses.

Cost of Feed of Working Horses: Two mares weighing, respeetively, 1,140 and 1,285 pounds ate the following quantities of feed from November 1, 1916, to March 31, 1917: 3,373 pounds of hay, 3,313 pounds of oats, 704 pounds of bran, 180 pounds of molasses. At the above-mentioned priees it cost, for feed per mare, for five months,

$36.97. During that time they worked an average of 484 hours each, which brings the cost of work, for feed alone, to 7·6 cents per hour. When interest, depreciation, barn room, shoeing, blanketing, harnessing and care are taken into consideration, horse labour is, of course, much more costly.

Selling breeders at reasonable prices.—The stud of French-Canadian horses at Cap Rouge is, without doubt, the largest and best in existence to-day. About half a dozen youngsters are raised each year, and most of them are for sale at reasonable prices. Some have been shipped to New Brunswick and to Nova Scotia, besides Quebec.

Sheep.—The flock comprises a 2-year-old ram, six yearling rams, sixteen breeding ewes, five shearling ewes, and twenty lambs, all pure-bred Leicesters. These are kept for experimental feeding, experimental housing and to sell breeders at reasonable prices.

Experimental Feeding.—The work undertaken is to find out how much feed it takes to carry a breeding ewe over the winter. In 1916-17, it took 2·95 pounds of hay, 0·47 pound of pea straw, 2·12 pounds swede turnips, 0·75 pound oats, 0·46 pound bran per ewe per day. The ewes experimented with were Leicesters of about average weight, and fifteen of them raised nineteen lambs. If breedings ewes are fed about 200 days, to give a chance to pastures to start in the spring, it will cost about $5.85 per head for feed, to winter them, calculating hay at $7, straw at $4, swedes at $2 per ton, oats at 1·5, and bran at 1 cent per pound.

Experimental Housing.—Many farmers are deterred from breeding early lambs because they are under the impression that these have to be kept in warm quarters for a long time. According to experiments made at this Station, a lamb can withstand a great deal of cold when from two to six days old. Every one dropped in March was sent up with its dam, when of the above-mentioned age, to a single-boarded shed; they all grew well, and were always healthy.

Selling breeders at a reasonable price.—The Leicester is very popular in this district, and rams are eagerly picked up as soon as available for sale. Careful records are kept, and poor or shy breeders are sent to the butcher. Moreover, the weight of fleeces is kept, also samples, so that the improvement made by different rams is noted. It is the aim that only good breeders should be bought by farmers who apply to the Cap Rouge Station.

POULTRY.

Barred Rocks are kept; 312 layers were wintered, and 779 chicks were raised. For the latter, 2,617 eggs were used, out of which 505, or 19 per cent, were not fertile, whilst of the remainder 1,162 or 55 per cent did not hatch out. Of the 950 chickens placed in the brooders, 779, or 82 per cent, were raised. The percentage of chicks raised from the total number of eggs was 30, and from the fertile eggs, 37. It took 3·3 eggs per marketable chicken.

Experimental Breeding.—This consisted in comparing pullets with hens; also heavy with light layers as producers of hatchable eggs.

Pullets versus Hens as Breeders.—The result of one year shows that 100 eggs from late pullets gave 42·4 strong chicks, whilst early pullets gave 40·8, yearlings 38·6 and 2-year-olds 28·2. This is contrary to expectations, and the experiment will be continued.

Heavy versus Light Layers as Breeders.—Four pens were used. One of them laid 955 eggs in four months and the others 545, 154, 16. The strong chicks hatched from these eggs were, respectively, 390, 231, 59, 5, which shows that the percentage of hatchable eggs was larger from the good layers than from the poor ones. This also, seems surprising, and the experiment will be continued.

Layers of different ages.—The average of two years shows that during November, December, January, February, early pullets produced eggs at a cost of 18 cents, late pullets 56 cents, yearling hens 83 cents, and old hens $5.59, per dozen. A remarkable thing is that the pen of 25 yearlings used in 1916-17, when each lost 40 cents during the four winter months, was, with two exceptions, composed of the same birds which, as early pullets, had given a profit of 89 cents per bird during the four corresponding months of 1915-16.

Experimental Feeding.—Four experiments were made to compare different kinds of feeds and methods of watering.

Skim-milk versus Beef Scraps: All feed given to two pens of birds was the same, except that one received skim-milk and the other beef scraps. In four months, the 25 birds in the "skim-milk" pen produced $6.15 worth more of eggs and meat (increase in live weight) than the others.

Roots versus Clover: All feed given to two pens of birds was the same, except that one received dry clover leaves and the other swedes. The latter pen of 25 birds was $1.81 ahead at the end of the four months.

Commercial Grain versus Separator Screenings: Two pens of 25 birds each were fed alike, except that one received commercial grain and the other separator screenings. The latter were valued at two-thirds the price of the former, and were $1.97 ahead at the end of the four months.

Water versus Snow: Both lots were fed absolutely the same quantities of feed; one of them received water and the other snow. The pen of 25 birds, which received water, was $2.19 ahead at the end of the four winter months.

Experimental Housing.—The range of mean temperature, during the winter of 1916-17, was 40·0° F., outside, 19·2° in a colony house 8 feet wide, 16·7° in a laying house 12 feet wide, and 15·1° in a laying house 16 feet wide. All styles of houses were the same, and they only differed in width. It would seem that the widest house had the most equable temperature.

Miscellaneous.—Four different lots of eggs were preserved in as many ways: the two lots in lime-water and in water-glass were in excellent condition and quite good about five months afterwards, whilst the two lots, simply wrapped in paper, one lot of which was turned daily, were decomposed and not fit to be used.

BEES.

The bees kept at Cap Rouge are hybrids between Italians and Blacks. They are kept for commercial and experimental work.

Commercial Work.—The total production of honey from thirteen hives, spring count, was 1,218 pounds, so that the average per colony was 93·69 pounds. The highest yield from a colony was 131 pounds, and the smallest 65. The colonies ranged in weight from 58 to 76 pounds when placed in the cellar on November 13, 1916, and averaged 64·2 pounds, whilst they ranged in weight from 43 to 74 pounds and averaged 55·5 pounds when taken out on April 13, 1917. Most of the loss occurred after the first of March.

Experimental Work.—This deals specially with feeding and housing.

Experimental Feeding: The bees wintered on early-gathered stores lost an average of 11·5 pounds per colony during the winter, were in good to very good condition in the spring, and covered an average of 7·5 spaces when taken out, whilst the ones wintered on late-gathered stores, on honey and sugar syrup, and on sugar syrup alone, respectively, lost 3·7, 4, 6 pounds, were all in excellent condition, and covered 9·3, 10, 10 spaces in the spring. This is quite the reverse of what was expected, and the experiment will be continued.

Experimental Housing: At the beginning of December, wet sand was placed on the concrete floor of the bee cellar, and sprinkled occasionally. This, however, had to be discontinued about the middle of January, on account of the offensive odour from dead bees. Afterwards, a great deal fewer bees died.

FIELD HUSBANDRY.

The work done in this division comprises crop management and agricultural engineering.

Crop Management.—Under this come crop yields, cost of production of field crops, rotations and experimental work.

Crop Yields.—The yields were lower for oats, corn, and swedes than usual, but much higher for hay. Longfellow corn yielded at the rate of 6 tons 314 pounds per acre; Good Luck swedes, 14 tons 22 pounds, Banner oats, 50 bushels (of 34 pounds) and 19 pounds; clover hay, 2 tons, 1,968 pounds; timothy hay, 2 tons, 1,505 pounds.

Cost of Production of Field Crops.—The results of four years of accurate record keeping show that it cost $2.29 per ton to grow swedes, $5.32 per ton for hay, and 30·6 cents per bushel of 34 pounds of oats.

Rotation of Crops.—A three year rotation has been run six years, and during that time a loss of $5.92 per acre has been transformed into a profit of $3.42, which is a gain of $9.34 per acre.

Experimental Work.—Five projects are under investigation, as follows:—

Planting Fodder Corn in Drills *vs.* Hills: After five years, it has been found that the drills 48 inches apart give 20,819 pounds of green corn, with 1,176 pounds of nutrients per acre; drills 42 inches apart, 19,887 and 1,026 pounds; hills 36 inches apart, 12,402 and 691 pounds; hills 42 inches apart, 12,356 and 644 pounds. When sown thickly, a variety of corn must be used which would bring ears to the glazed stage, were it sown thinly. If the ground is very weedy, hills are better, so that cultivation can be given both ways.

Rates of Seeding Oats: Thirteen different rates from 1 to 4 bushels per acre have been tried for four years. The average for the six rates below 2½ bushels per acre was 1,845·3 pounds of grain per acre, that for the six rates above 2½ bushels was 2,039·3, and that for the rate of 2½ bushels was 2,039, the second highest yield. This was on a sandy loam.

Yield of Hay when Nurse Crop is sown at Different Rates: Oats were sown at thirteen different rates from 1 to 4 bushels per acre for four years, and the hay weighed the next year from each plot. There was more hay when the crop of grain was the heaviest, that is from the seedings above 2½ bushels per acre, contrarily to expectations. The second largest crop of hay was after the standard rate of seeding of 2½ bushels of grain per acre.

Rates of Seeding: Since 1912, inclusive, 100 plots of 1-60 acre each have been used for this experiment, on half of which 12 pounds of timothy, 8 pounds red clover,

and 2 pounds of alsike were sown per acre, with oats as a nurse crop; whilst the others only received half of these quantities. The thick seeding gave 13 per cent more hay.

Yield of Hay with different Nurse Crops: Since 1912, inclusive, all the trial plots of grain, 192 in number, were seeded down to timothy and clover. The soil is a sandy loam not well adapted to hay, but this does not affect comparative results. After barley, the crop of hay averaged 4,144 pounds per acre; after wheat, 3,954; after peas, 3,897; after oats, 3,570.

FERTILIZERS.

Five acres are devoted to experiments with fertilizers on 130 different plots. There are now six projects under investigation.

The most effective formula.—Different combinations of the three main elements, nitrogen, phosphoric acid, and potash, are used in a three-year rotation of potatoes, oats, clover. This experiment has run two years, and the most important finding was that, on a clayey loam such as was used, the least important element was potash.

Comparative values of different forms of nitrogen and phosphoric acid when there is enough potash.—In a three-year rotation of potatoes, oats, clover, nitrate of soda has proved superior to sulphate of ammonia for the two first-mentioned crops, and so has superphosphate shown its superiority over bone meal and basic slag, which were of about equal value.

Manure vs. clover as a source of humus.—The results of one year, for a crop of oats, have shown an increase of 23 per cent grain and 33 per cent straw from the manured plot. This experiment is to run about six years, at the end of which samples of soil will be examined and analysed for their humus content to compare with the ones taken at the beginning.

Comparative value of different elements as supplements to farm manure.—This is to throw some light on the problem of using part manure and part fertilizers. One of the main results, though, after only one year's test on oats, was that the complete fertilizer increased the crop by 50 per cent, whilst nitrogen or potash each only increased it by 25 per cent.

Burnt lime vs. ground limestone.—On oats, ground limestone applied at the rate of 7,500 pounds per acre at seeding time practically gave no increase, whilst burnt lime applied at the same time at the rate of 4,200 pounds per acre increased the grain by 9 per cent and the straw by 16 per cent. It will be interesting to watch the residual effects of the ground limestone on the hay.

Value of ground seaweed as a fertilizer.—The results of two years, on potatoes and oats, show that 100 pounds of nitrate of soda was equal to 930 pounds of ground seaweed, 100 pounds of a 2-2-5 mixture of acid phosphate and basic slag was as good as 736 pounds of ground seaweed, and 100 pounds of muriate of potash gave as good results as 1,920 of ground seaweed. There are yet to be recorded the after-effects on clover hay.

CEREALS.

The work with cereals at this Station comprises tests of varieties, the isolation of good strains, the growing of grain for hay, and the production of seed for sale.

Variety tests.—Nine varieties of spring wheat were tested, and the result of six years places Huron at the head; eight varieties of oats were in the test plots, and Banner shows up on top after five years; five varieties of field peas are led by Arthur at the end of five years; of the eight varieties of barley tried, Manchurian is recommended.

Selection of best strains.—That some strains are better yielders than others is shown by the fact that the comparative yields of the lowest and highest, for Manchurian barley, was as 100 to 163, for Arthur peas as 100 to 133, for Huron wheat as 100 to 133.

Growing of grain for hay.—The results of two years show that oats alone, or oats and peas, or oats, peas, and vetches not only give a higher tonnage of hay than clover and timothy or timothy alone, but also give more dry matter per acre. The hay from oats and peas, or oats, peas, and vetches contains more protein, and is thus more valuable than that from clover or timothy.

Production of seed for sale.—Huron wheat, Manchurian barley, Arthur peas and Banner oats are the varieties recommended for this district, and are grown for seed. This is cleaned and separated by modern machinery and shipped in sealed bags so as to avoid substitution. Prices are given to inquirers on application. This seed is of a very high grade, and has never yet disappointed a single buyer.

FORAGE CROPS.

Investigations with forage crops consist in testing varieties, selection of good strains, and comparison of different methods of helping the germination of mangel seed.

Variety tests.—Longfellow has been found one of the best corns for silage, whilst the results of six years place Good Luck at the head for swedes, Giant Yellow Intermediate for mangels, and Improved Short White for carrots.

Isolation of best strains.—Work of this description was continued with Indian corn, swedes, Kentucky blue grass, meadow fescue, orchard grass, perennial rye grass, red top, sheep fescue, timothy, western rye grass, alfalfa, and red clover.

Helping the germination of mangel seed.—Fertilizer, also salt, mixed with the soil or sown in the row, did not compare at all favourably with seed soaked for twelve hours in water, or in water and liquid manure. Watering, or even only packing, the soil had nearly as good an effect as soaking the seed. This experiment is only the result of one year, and not yet conclusive.

HORTICULTURE

There are three lines of investigation with flowers, fruit, and vegetables: testing varieties, cultural experiments, propagation of the best kinds. There was, in 1916, over 20 acres used for this purpose.

Testing varieties.—The following numbers were tested in 1916: apples 150, cherries 15, pears 4, plums 40, grapes 24, black currants 16, red currants 12, white currants 3, gooseberries 12, raspberries 11, strawberries 34, potatoes 20, vegetables 221, ornamental plants 1,031. As there are at least four examinations to be made each season, this takes considerable time, just for the records.

Cultural Experiments.—These were made for apples, strawberries, beans, beets, cabbage, carrots, cauliflower, celery, onions, parsnips, peas, rhubarb, tomatoes.

Propagation of the best varieties.—Some of the most promising varieties of apples, plums, grapes, currants, gooseberries, strawberries, raspberries, are being propagated. Seed is grown of all vegetables that do well in the district, with the exception of cauliflower and celery; and in many cases the Cap Rouge strain ha proved superior to all commercial ones.

SPECIAL CROPS.

Flax.—An acre of flax was grown for fibre; it was found that pulling the plants is a very long job, and quite costly when done by people who are not used to such work. If the land is at all weedy, it seems impossible to grow this crop with profit.

Tobacco.—Three varieties were grown: Canelle, Comstock, and Petit Havanne. The latter is such a low yielder that it is not recommended for this district, though it is very early.

FARM IMPROVEMENTS.

Buildings.—Building operations were practically suspended during the year, only a couple of sheds for horses and sheep being erected.

Clearing Land.—This consisted mostly in clearing odd places of obstructions such as trees, stumps, stones, so as to facilitate the use of implements.

Draining.—It is practically impossible nowadays to get men to work at this, and only small areas were tiled in 1916, where they interfered with the use of the four-horse machines which are now used at this Station.

Fencing.—This received much attention, and a cross-road behind the orchards was fenced, the intention being to have two other of these roads so that visitors can drive around and see everything without having to get into the fields.

Roadmaking.—Most of the improvement work was done here. Quite a number of concrete silt basins were made to take away surface water from ditches, in hollows, and were connected with the nearest drain.

EXHIBITIONS.

The work for this division consists in distributing literature and in staging exhibits at fairs.

Distributing literature.—This is done from the Station, at fairs, and also by sending to Ottawa the addresses of interested persons. A great many names were thus added to the mailing lists.

Exhibitions.—Exhibits from the Station were sent to the following fairs: Three Rivers, Quebec, Lotbinière, St. Tite, St. Casimir, besides to five different ones in the New England states, the latter through the Department of Interior. Diplomas were secured at four places.

VISITORS.

There were three excursions to the Station during August, 1916, from different counties of Central Quebec, and the total number of visitors was 2,422.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

REPORT OF THE SUPERINTENDENT, J. A. McCLARY.

THE SEASON.

The light snowfall, frequent thawing and hard freezing during the winter of 1915 left much frost in the ground, preventing very early seeding.

The first wheat was sown on the 3rd of May and the general grain crops were sown the following week, on land which had been underdrained the previous year.

The heavy rainfalls of the latter half of May and the month of June made it almost impossible to get land in shape for corn. This crop was only planted June 16, and made very slow growth up to September 1, but with the warm sunny days of that month much progress was made, and a fair crop harvested.

The weather during the winter of 1916-17 has been an exception in this district as there has been no thaw to take away the snow, which came the middle of December, until March 24. Steady, cold weather has prevailed throughout the winter, the thermometer registering below zero twenty-two days in the month of February.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperatures.				Precipitation.			Total Sunshine.
	Maximum.		Minimum.		Rainfall.	Snowfall.	Total.	
1916.	Date.	Deg.	Date.	Deg.	Ins.	Ins.	Ins.	Hours.
April	25	68	3	18	2·34	.....	2·34	174·8
May	29	80	10	23	4·20	.....	4·20	155·0
June	2	79	2	35	4·72	.....	4·72	180·1
July	20	90	15	41	5·68	.....	5·68	250·5
August	19	91	2	40	3·91	.....	3·91	227·3
September	7	80	11	32	5·64	.....	5·64	133·2
October	5	78	12	22	2·59	.....	2·59	149·5
November	9	65	17	0	2·67	.....	2·67	74·8
December	6	49	30	−30	0·74	15·9	2·33	72·4
1917.								
January	14	43	20	−40	0·86	27·3	3·59	69·5
February	18	40	13	−36	.....	8 5	0·85	105·5
March	26	53	7	−20	0·85	7 5	1·60	153·4
					34·20	59·2	40·12	1.746·0

LIVE STOCK.

Horses.—This Station now has twenty horses; six registered Clydesdale mares, eleven well-graded work horses, one driver, one registered Clydesdale stallion two years old and one filly foaled in the fall of 1916.

Four of these horses were wintered in the yard with a loose box stall to run into. They were fed on a ration of 20 pounds of swedes and 28 pounds of hay per day, which makes a very economical way of wintering idle horses, and at the same time giving them plenty of exercise. The horses held their normal weight throughout this experiment.

These horses were put in the barn on March 23, and received a light grain ration of two parts oats to one part bran. They were given light work to prepare them for seeding operations.

The horses wintered outside cost 13·3 cents per horse per day to feed. Those kept inside, which were fed a light grain ration throughout the winter, cost 19·5 cents per horse per day.

Beef Cattle.—Eighty-nine 2-year-old grade Shorthorn steers were purchased locally in October, 1916, and were put on feed November 9. The year was exceptionally good, the spread between cost and selling price per hundredweight being $4.83. The average profit per steer was $39.61. Twenty of the steers were divided into two lots, one being fed loose in box stalls, the other lot being tied. The profit per steer "loose" was $40.23, and "tied" $39.62.

Sheep.—There are now at the Lennoxville Station, fifty-eight sheep, nine of which are registered Oxford ewes, three registered Oxford shearlings, one registered Oxford ram, thirty-five grade ewes, and ten shearling ewes.

The wool clip was sold in the spring of 1916, for 43 cents per pound; average weight of fleece, 8·13 pounds.

Surplus lambs were sold, and a sale was also held of registered rams for breeding purposes.

FIELD HUSBANDRY.

Rotations.—Work with rotations has not yet commenced at this Station, owing to the necessity of first working the land into suitable condition.

Crop Yields.—The hay crop was an average one, with a high percentage of clover in meadows seeded the previous year. The seeding mixture used on the Station was 9 pounds red clover, 2 pounds alfalfa, and 10 pounds timothy, per acre. The yield of hay was 250 tons. Clover seed production was given considerable attention, and 200 pounds was saved and threshed in the fall of 1916. This work has aroused considerable interest among the farmers of the district, many of whom are now growing and sowing their own clover seed.

The grain crop was below average, owing to excessive spring rains and extreme heat in August.

Fifty acres were planted to Indian corn on June 20, on old sod land. The heavy rainfall during May and June prevented earlier sowing, and a heavy yield was not hoped for. However, three large silos were filled, furnishing sufficient winter silage for 89 steers, 23 dairy cattle, and 58 sheep.

Two acres were sown July 1 to rape for fall pasture for sheep and lambs. The results were excellent, and every farmer is advised to sow at least a small area for this purpose.

FERTILIZER EXPERIMENTS.

The special work with fertilizers was begun this year on a three-year rotation, consisting of turnips, grain, hay. The objects in view are: (1) to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profit; (2) to ascertain the relative efficiency of different sources of nitrogen and phosphoric acid; and (3) to ascertain the fertilizing value of a nitro-potassic fertilizer prepared from seaweed. The work must necessarily continue for a period of years before definite conclusions can be drawn.

FORAGE PLANTS.

Owing to the extremely wet spring, it was impossible to carry on all the experiments with forage plants which had been planned for 1916. Among the experiments dropped were the variety tests of mangels and carrots.

Thirteen varieties of Indian corn for ensilage were grown. The highest yield was obtained from Wisconsin No. 7, 15 tons 1,600 pounds; and the lowest from Free Press, 5 tons 1,275 pounds.

Eighteen varieties of field turnips were tested. The highest, Good Luck, yielded 20 tons 850 pounds per acre; and the lowest, Corning's Lapland, 12 tons 450 pounds.

Clovers and grasses.—Alfalfa, Grimm's Variegated, was sown in drills 2½ feet apart, and was also sown broadcast with a crop of wheat. There was a marked difference in the growth, the alfalfa sown in drills being much more vigourous and sending its roots down more deeply.

The following plots of grasses and clovers are under test for hardiness and adaptability: Timothy, orchard grass, red top, Kentucky blue grass, meadow fescue, sheep's fescue, western rye grass, perennial rye grass, red clover, Swedish clover, and alsike clover.

All wintered satisfactorily with the exception of the perennial rye grass, which completely winter-killed.

HORTICULTURE.

Fruits.—The fruit trees in the cultural orchard made remarkably good growth in 1916. There was, however, some injury during the previous winter, about 20 per cent of the trees being seriously damaged. Ninety-three trees were replaced.

In the variety apple orchard, the trees wintered fairly well, and made good growth.

The standard plum trees planted in the spring of 1915 have not done very well so far, but the seedling varieties have made strong growth and are developing into good trees.

Some of the seedling pear trees have wintered well; others were badly injured or killed. The pear trees have been moved to another site, where the soil is heavier and more protection from wind is afforded.

The small fruit crops were light in 1916, owing to the plants being young and not sufficiently established.

Vegetables.—Tests were conducted with the following varieties of vegetables: lettuce, radish, garden peas, parsley, beans, parsnips, cucumber, sweet corn, carrots, beets, leeks, onions, cabbages, Brussels sprouts, cauliflower, peppers, watermelon, muskmelon, citron, pumpkin, squash, celery, tomatoes, and potatoes. With some of these, experiments were carried on as to dates of sowing, distances of thinning, protection of plants from insect injury, methods of blanching (celery), methods of training and ripening (tomatoes). With potatoes, trials were made in planting different kinds of sets, at different distances between sets and rows, methods of cultivation, etc., and a commencement was made in potato selection work.

Ornamentals.—The area for the main lawn was graded, smoothed, and seeded, and the lawn fencing erected. The demonstration hedges planted in 1915 made good growth in most cases. Two borders were planted in October, one of perennials, the other part perennials and part shrubs. The annual flowers bloomed fairly through the season, and proved a great attraction to visitors.

FARM IMPROVEMENTS.

Buildings.—The erection of the new dairy barn at this Station was commenced in September, and completed on the 23rd of December. This barn is 37 feet wide by 96 feet in length, with feed room attached, 20 by 30 feet, and one silo, 17 by 30 feet; also a cooling room for milk. The barn will accommodate 46 head, with an abundance of light and the best of ventilation.

Necessary repairs were done on the old buildings in use at this Station.

Fencing.—Two hundred and fifty rods of 48-inch high, No 9 galvanized wire fencing, was erected on the farm roads and other parts of the farm during the summer and fall. There was also erected 1,225 feet of lawn fence around the horticultural area.

Drainage.—The underdrainage system already laid gave satisfaction, as it permitted of raising a good crop of grain on the land which, with the excessive rains this past season, could not otherwise have been cropped.

During the season, 75,000 feet of underdrains were installed, located as follows: 60,000 feet on the R. W. Reid farm; 2,000 feet in the variety orchard; 13,000 feet on the Ed. Read farm. These systems are working satisfactorily, as demonstrated by the fact that this land can now be worked much earlier in the spring.

Roads.—The public roads leading through the farm were kept in good condition during the summer of 1916, and in the winter 1916-17 gravel was drawn and spread on the farm road leading past the new dairy barn for a length of 125 rods. The road leading from the Cookshire road towards the brick-yard was also gravelled.

EXHIBITIONS.

The Experimental Farms' exhibit was shown at Brome, Ayer's Cliff, and Sherbrooke. Much interest was manifested by visitors at all these fairs, the demand for publications was brisk, and a large number of names were added to the mailing lists.

MEETINGS.

On the 12th of August there was organized a Farmer's Day for this Station, when invitations were sent out to all the farmers and their families in the Eastern Townships. The response was very encouraging; over one thousand people assembled at this meeting, at which were present the Hon. Martin Burrell, Minister of Agriculture; J. H. Grisdale, Director, Dominion Experimental Farms; J. A. Simard, B.S.A., of the Seed Branch; and others, who gave practical addresses on agricultural subjects.

The staff have also attended a number of agricultural meetings in different sections of the Eastern Townships throughout the winter.

VISITORS.

During the past year there has been a marked increase of visitors, who showed much interest in the different lines of work being conducted at the Station.

The farmers are coming more to realize the advantage of adopting more systematic methods in the rotation of their crops, the cultivation of the same, selection of their seeds, the guarding against plant diseases and insects, and the selection, breeding, feeding, and housing of their live stock. Much interest was shown by the ladies and townspeople in the garden work.

EXPERIMENTAL STATION, SPIRIT LAKE, QUE.

REPORT OF THE FOREMAN-MANAGER, P. FORTIER.

ESTABLISHMENT OF THE STATION.

An internment camp for alien enemies was opened at Spirit Lake, on the site of the proposed Experimental Station, in January, 1915. At that time, except for the land belonging to the Transcontinental Railway, what is now the Experimental Station was, like all the Abitibi district, densely wooded, the chief forest trees found there being the spruce, white birch and aspen. The first clearing work was done by the prisoners.

Some 155 acres have now been cleared, and 150 acres of this area has been prepared for cultivation. The greater part of the wood obtained from this clearing work has been sold as pulp-wood, about 2,500 cords having been cut. In September, 1916, the foreman-manager took charge of the administration of the Station, but it has only been since January, 1917, when the internment camp was removed, that the work has been entirely under the control of the Department of Agriculture.

SITUATION AND AREA.

The Station is situated between the 48th and 49th degrees of latitude and the 78th and 79th degrees of longitude, in the townships of Dalquier and Trecesson. Its altitude is about 1,000 feet.

This land was the property of the Provincial Government of Quebec, which deeded it, for a nominal sum, to the Federal Department of Agriculture, with the understanding that the area is to be used for Experimental Farm purposes. The area so far transferred is about 1,200 acres, which may later be increased to some 1,600 acres in all. Not all of this land is arable, there being a considerable frontage of Lake George included, which will probably be made into a sort of park or forest belt.

SEASONAL NOTES.

It is impossible to give precise temperature records for this Station during the past year, as no meteorological instruments were available. The spring opened early, but excessive rain from May 5 to June 15 made it impossible to do much work on the land. The weather was, however, dry from July 1 to August 15.

LIVE STOCK.

Horses.—There are twenty head of horses on the Station, eighteen of which are work horses, and the other two drivers.

Cattle.—Four cows, two Holsteins and two Ayrshires, are kept at the Station for the purpose of supplying milk to the employees.

POULTRY.

A start has been made with poultry, some seventy Plymouth Rocks being kept, most of which are doing well.

FIELD HUSBANDRY.

Seventy acres were sown to oats, 20 acres of this area being seeded to clover; 2 acres were sown to turnips, and 2 acres to beets. The crop of oats was excellent from one field of 10 acres, one area of one and a half acres yielding 150 bushels. Twenty tons of unthreshed oat straw were used as feed for the live stock.

HORTICULTURE.

Fruits.—Several varieties of apple and plum trees, currant bushes and raspberry canes have been planted during the last eighteen months, but their growth has been feeble. It will be necessary to transplant them, as the soil where they were planted is not deep enough, being very stony; in fact, several trees have died.

Vegetables.—One acre was devoted to vegetables; the yields were very good.

Ornamental Gardening.—Several varieties of annual flowers were sown, and grew very well. There is little doubt that perennials will be able to stand the rigour of the winter at this Station.

BUILDINGS.

All the buildings erected by the military authorities are still available, but as most of them are of only a temporary character, these will have to be torn down and re-built, except the water tank, the barn, the foreman-manager's house, and the five cottages at the edge of Spirit Lake, and even these will need extensive repairs before being of permanent use. During the year, a greenhouse, a small stable at the back of the barn, a pump-house, and a small poultry-house have been constructed, and one of the shacks has been remodelled as a horse barn.

WATER SUPPLY.

The water supply for all the buildings on the Station is obtained from Spirit Lake, and is pumped into a reservoir of 30,000 gallons capacity, by a pump driven by a gasoline engine.

CLEARING OPERATIONS.

During the fall, winter, and spring of 1916-17, 965 cords of pulp-wood were cut and hauled to the railway siding on the Station ready to be shipped. In the same period, 75 acres were cleared.

EXHIBITIONS.

Various farm products, grown at the Spirit Lake Station, were exhibited at the Amos fair, last fall.

EXPERIMENTAL STATION, KAPUSKASING, ONT.

REPORT OF THE FOREMAN-MANAGER, S. BALLANTYNE.

ESTABLISHMENT OF THE STATION.

Just four months after the European war broke out, several colonist cars were shunted into a lonely siding at MacPherson station, New Ontario. All that MacPherson could boast of then was its station and water tank, a shack or two besides, and the deserted camps of the T.C.R. survey party on the banks of the Kapuskasing river. Nothing then could be seen from the station but dense spruce forests rolling away to the sky line in every direction.

This isolated station on the Kapuskasing river was chosen as a camp for the interning of alien prisoners. By an arrangement between the Department of Militia and the Department of Agriculture, it was planned to utilize the prisoners' labour for the purpose of cutting down the timber and clearing the land for a Dominion Experimental Farm and for opening up and starting development in this portion of the great clay belt.

The Kapuskasing camp and the Experimental Farm had its beginning on December 14, 1914, when Lieut. Swain and his men of the 19th regiment of Kingston, with fifty-four prisoners, were shunted into the siding overlooking the turbulent river. On Christmas Day over 100 more prisoners arrived under the escort of the Governor General's Body Guard of Toronto.

With this number of prisoners the camp began to grow by leaps and bounds, trees began to disappear, the land became cleared, buildings began to go up, and MacPherson became the nucleus of a thriving camp; the farm was being slowly carved out. Every week or so numbers of prisoners arrived both from the east and the west, and gave fresh impetus to its growth and development.

To-day when one steps off the train at MacPherson, south of the track a veritable farm of over 700 acres can be seen, the timber seeming to have disappeared as if brushed away by magic.

On this farm spread along the right bank of the river lies the camp, the buildings being laid out in the form of a military square, while behind the station north of the track lies a little village of mushroom growth, the married quarters of the soldiers in camp.

As one enters the camp south of the track he passes a cluster of buildings belonging to the commissiariat, and the regimental institute or soldiers' canteen. On the right side of the square on entering lie the numerous bunk-houses of the prisoners, the barracks of the soldiers, and the hospital buildings, while on the left lies the guard-house, the large recreation building of the soldiers, the blacksmith shops, the tool-house, carpenter shop, the buildings of the sergeants' mess and the administration or office building for the camp; while the officers' bungalow or residence overlooks the intervening space from the extreme end of the square, which is used as a parade ground.

DESCRIPTION OF STATION.

The farm comprises 1,280 acres of land, the whole being comparatively level, with gentle slopes toward the river. There are very few coulees or ridges in the total area.

Since operations began here in the fall of 1914 there have been 700 acres of timber slashed down; of this area, 150 acres have been cleared, and 120 acres roughly stumped. There is practically then only about 250 acres fit for agricultural purposes the coming summer, the remainder of the slashed area needing to be picked up, burned and stumped, while the rest of the farm has still its dense growth of standing timber.

Soil.—The land cleared has a soil of great fertility, being a rich, heavy clay loam, with a top soil of black muck.

Drainage.—The farm has natural drainage, the land being slightly undulating, with a gentle slope towards the river. The system of artificial drainage is not complete as yet, but there has been over 1,000 feet of drains laid down around the farm, while the office and stables have a sewage and drainage system of 3-inch tile laid at a depth of 3 feet, which runs into 6-inch mains that conduct the sewage to the river.

LIVE STOCK.

The live stock at this Station consists, at the end of March, 1917, of fourteen horses. These have been used in the general farm work.

FIELD HUSBANDRY.

Last year about 50 acres of rough land were sown to oats, the yield from which was very favourable, considering the condition of the soil. The crop was cut green and fed as roughage to the stock on the farm.

This coming spring it is hoped to have at least 150 acres prepared for crops

HORTICULTURE.

The first year the camp was opened, that is during the spring and summer of 1915, several acres of land along the river bank was planted with such vegetables as potatoes, carrots, onions, parsnips, lettuce, and radishes, which reached their maximum growth. In the summer of 1916, several small fruit trees and bushes were planted, some of which should be productive this coming summer.

BUILDINGS.

The farm buildings so far erected comprise the main barn, which in itself includes the cow barn and the horse barn, four other buildings, the office, stableman's house, pump-house, and the carpenters' shed.

The main farm building or barn is equipped with the Rutherford system of ventilation, and in construction throughout is similar in design to the barns at the Central Farm at Ottawa. The cow barn, size 38 by 100 feet, has accommodation for forty head of cattle, is to be finished in concrete, and is equipped with stanchions and truck manure carriers. The horse barn is situated at the south end of the main building, has fifteen single stalls and two box stalls, besides a harness room. Between the cow and horse barns at the north end of the buildings are the feed room and calf stalls. This main building is not completed as yet, but this coming summer should see all building operations on the main barn finished.

WATER SUPPLY.

The water supply to the farm is pumped from the river by a gasoline engine to the large storage tank at the barn, which has a capacity of 35,000 gallons. From this tank the water is distributed to the farm buildings through 2-inch mains.

FARM OPERATIONS.

Eighteen cars of gravel loaded at pit 2, a distance of over 82 miles from the camp, were unloaded at the farm and used in the construction of buildings.

Over 850 cubic yards of rock blasted from an outcropping of rock at the river were hauled and piled at the barn to be used this coming summer.

In the fall of 1916 the mill operations, etc., produced a cut of 60,000 feet of lumber, while the past winter the mill cut 65,000 feet.

During the winter the teams on the farm have drawn over 125 cords of firewood for the farm buildings and the employees, besides drawing wood for the camp; and have also drawn out about 300,000 feet of timber, which will be sawn this spring.

EXPERIMENTAL STATION, MORDEN, MAN.

REPORT OF THE FOREMAN-MANAGER, CHAS. BOYLE.

SEASONAL NOTES.

The ground was not in workable condition until the end of April. The first half of May was cool and stormy, but the weather improved during the remainder of the month. Good growing weather was experienced in June, but hot weather, with scorching south winds, and a few damp days in July favoured the development of wheat rust. August was a month of fairly cool weather and heavy rainfall. The first frost occurred on September 15, and frost was also registered on the following two nights. Several inches of snow fell on October 17, followed by mild weather and bright sunshine until November 12, when the mercury dropped to zero. Real winter did not set in till December 9. The temperature dropped to 33 degrees below zero on December 19, and the first heavy snowfall of winter occurred December 26 and 27.

LIVE STOCK.

Horses.—Most of the horses at the Station are kept solely for farm work. A number of good grade Clydesdale mares are now included, however, and these will be used for breeding purposes. Four idle mares were fed during the winter on a

daily ration consisting of 4 quarts oats, 1 sheaf corn, 1 sheaf oats, and 7 pounds hay, at a cost of 14½ cents per mare per day.

Cattle.—The work with cattle on this farm has so far been confined to the finishing of steers for market. Twenty steers bought in 1915 were sold in 1916 at $8.75 per hundredweight. The average gain in weight during a feeding period of 204 days was 301 pounds, the average weight of the steers when sold being 1,321 pounds, and the net profit per head was $16.28.

Thirty steers of very good quality were purchased in November, 1916, and divided into two lots for a feeding trial to compare the finishing of steers in a barn with those finished in a single-board shed and corral protected by a board fence. This experiment has not yet been completed.

Sheep.—A flock of 50 grade ewes was purchased in the fall of 1915 for breeding purposes. These have all been bred to pure-bred Hampshire rams of good type and quality. The flock at the present time numbers 72 head and is in excellent condition. During the past winter a feeding experiment to demonstrate the value of rusted wheat sheaves was commenced, but has not yet been completed.

FIELD HUSBANDRY.

Crop yields.—Eight acres of the 1915 summer-fallow were seeded down to Marquis wheat before the middle of May. Germination was excellent and the crop outlook very good until July, when the hot weather, combined with a certain amount of rain and dampness, produced a destructive attack of rust in the district. Not only was the grain badly rusted, but the top of each head of wheat was badly shrivelled, so that even without the rust, the crop would have been rather less than average. As it was, the wheat was not fit to thresh, and a quantity was stacked for feed, while some was burned in the field.

The remaining 20 acres of the summer-fallow were seeded to barley, cross-sowed, to eradicate any couch-grass that might be left. The crop was light.

An old brome pasture of 50 acres was seeded to oats. The yield was small, and the growth of straw light.

The 35 acres seeded down to western rye grass and red clover yielded a fairly good first crop. Nine acres of last year's corn and root patch was seeded to alfalfa in June, and gave an excellent catch. The field was cut once, to combat weeds.

About 8 acres were planted to field corn, which grew luxuriantly and yielded a good crop. The season was a very favourable one for corn, and should encourage farmers to grow corn for fodder more generally.

The remaining 60 acres of cultivated land were summer-fallowed. Fifteen acres were kept black all season, and 45 acres seeded to fall rye about September 15. The germination was good, and promises well for a good stand in the spring, especially as the snowfall during the winter has been quite heavy, giving good protection.

HORTICULTURE.

Marked progress in the horticultural work at this Station was made last season. Hot-beds were established, a horticultural area was fenced, and plots laid out. Outside sowing of garden seeds commenced about May 5.

For temporary protection from high winds and from snow drifts, rows of sunflowers were grown round the tree nursery, the young orchard, and the vegetable plots. Permanent protection was also provided for by hedges of Siberian pea tree, *Caragana arborescens*, and laurel-leaved willow.

Fruits.—About 1,000 trees were planted in the orchard area in the spring of 1916. These made a healthy growth, and were in good condition when winter set in. Clean cultivation was followed in the orchard until the middle of July, when rape was sown.

An area was also set aside for small fruits, and a number of varieties of raspberries, gooseberries, currants and strawberries were planted.

Vegetables.—Potatoes were not a heavy crop in the Morden district last year. Other vegetables grown were artichokes, beans, beets, Brussels sprouts, cabbage, cauliflower, carrots, celery, table corn, cucumbers, lettuce, musk melons, onions, parsnips, peas, pumpkins, radish, rhubarb, salsify, squash, turnips, and tomatoes.

The comparison of home-grown versus commercial seed will be conducted with a number of these.

Ornamental Gardening.—Further sowing and planting were done in the nursery, from which it is hoped to obtain most of the varieties of trees and shrubs required for the ornamental grounds at this Station. The season of 1916 was favourable for flowers, and an excellent display was obtained. Seed was collected from a number of varieties, and will be tested in 1917 in comparison with seed obtained from commercial sources.

FARM IMPROVEMENTS.

Buildings.—During the year an open shed and corral were put up for use in experimental work in feeding steers outside. A combined storeroom and tool shed, 12 by 20, was also built, and a small office building erected.

Fencing.—Over three miles of boundary fencing was put up; 8-foot cedar posts and No. 9 Page woven wire fencing, 51 inches high, were used, two strands of barbed wire being above the woven wire.

Machinery.—Some implements were purchased, including a corn harvester, a spraying outfit, and sheep-shearing equipment.

MEETINGS.

Mr. S. A. Bjarnason, Assistant in Horticulture, addressed several agricultural society meetings on horticultural and farming topics. He also took an active part in the work of the local horticultural society, and gave lectures and demonstrations to the pupils of the Morden high school.

EXPERIMENTAL FARM, BRANDON, MAN.

REPORT OF THE SUPERINTENDENT, W. C. McKILLICAN, B.S.A

The season of 1916 in Manitoba was chiefly noted for the most serious attack of rust in the history of the province. Up to July 20 conditions for crop growth had been rather better than the average, and at that time crop prospects were very good. The rust attack reduced the yield and quality of the wheat crop to the worst in over twenty years. Oats and barley were also seriously damaged. The hay crop was better than usual, and fodder corn was fairly good.

METEOROLOGICAL RECORDS, 1916-17.

Months	Highest Temperature F.	Lowest Temperature F.	Total Rainfall.	Total Snowfall.	Hours Bright Sunshine.
1916.	°	°	Inches.	Inches.	
April	65·1	− 1·0	0·22	7·0	175·4
May	78·1	20·1	1·59	.....	187·5
June	80·0	30·0	4·33	.....	189·6
July	92·5	37·0	2·63	.....	259·3
August	97·0	33·5	2·22	.....	260·6
September	81·5	22·0	2·39	.....	177·1
October	72·0	− 3·9	1·46	9·5	108 0
November	60·5	− 5·8	.....	1·5	132·9
December	44·5	−40·2	.....	9·0	115 3
1917.					
January	38·0	−49·0	.....	20·0	83 7
February	30·0	−44·0	.....	9·0	125·5
March	42·1	−27·0	.....	1·0	123·5
Total	.....	.....	14·84	57·0	1,943 4

Reckoning 10 inches of snowfall as equivalent to 1 inch of rainfall, the total precipitation for the year ending March 31, 1917, was 20 54 inches.

LIVE STOCK.

Horses.—Twenty horses are kept on the Brandon Farm. Three colts were born during the year, one dying when a few days old. Three horses were wintered outdoors, being fed all the hay they could eat, and some oats in addition. All gained in weight, and did not appear to suffer from the cold.

Cattle.—A carload of steers was purchased in November. They were divided into two lots, both receiving the same feeds, except that one lot received oat sheaves and the other the same amount of cut straw and chopped oats. The steers fed cut straw and oat chop made average gains of 236½ pounds at a cost of $7.96 per 100 pounds gain in weight; the lot fed oat sheaves made an average gain of 259 pounds at a cost of $7.41 per 100 pounds gain.

Thirty-eight Shorthorns and four grades are kept at this Farm. Milk records were kept for all the cows that completed a milking period during the year. It was found that it cost $41.16 to raise a heifer from birth to one year, and $33.14 from one year to two years.

Sheep.—The sheep at Brandon are Oxford Downs and grades. The lamb crop of 1916 was rather disappointing, only thirty-two lambs being raised. The sheep grading experiment was continued, and shows good results. The average wool clip was 9.2 pounds per sheep, or 646 pounds in all, and sold for $214.28.

Swine.—Eighteen Yorkshires and twenty-eight Berkshires were kept. Experiments in feeding showed that the cost of feeding a mature sow for a year was $26.32. Pasturing tests were also carried on with good results, and the self-feeder was used to good advantage. A comparison between pigs fed grain alone, digester tankage and grain, and buttermilk and grain proved the value of milk as a hog-feed, with digester tankage an excellent substitute.

POULTRY.

The poultry flock consists of birds of the White Wyandotte and Barred Plymouth Rock breeds. The birds are housed in six movable colony houses, each large enough to accommodate 25 to 30 hens. The hens laid moderately well all winter, but the pullets did not start to lay until February. During the winter all the birds were trap-nested, and records of the egg yield per hen kept. Hatching was started on March 30, but did not prove so satisfactory as in previous years. Portable houses were used for brooding chicks, and proved fairly satisfactory. After hatching was over, the cockerels were crate-fattened and killed.

BEES.

Of four colonies wintered outside, three colonies survived, and of twenty-two colonies wintered in the cellar, twenty-one were found to be strong when the spring examination took place, while the remaining one was queenless and weak. The total yield of extracted honey for the season was 1,350 pounds. Special attention was given to swarm control. The methods employed were very successful, and resulted in the issuing of only one swarm. The 10-frame Langstroth hive was used for the first time in the spring, and gave good satisfaction.

FIELD HUSBANDRY.

The work in field husbandry consists of crop rotations and cultural investigational work.

Rotations.—In connection with the rotations, records are kept as to the cost of production of different crops in the rotation. The following eight rotations were tested:—

"D," four years' duration (wheat, wheat manured, oats, summer-fallow): This is purely a grain-growing rotation, manure being applied every four years.

"E," four years' duration (wheat, wheat, oats, summer-fallow): This is exactly the same as "D," except that no manure is applied.

"F," five years' duration (wheat, wheat, corn or roots, oats or barley, clover hay): This is a mixed farming rotation suited to conditions where it is desired to grow both a large quantity of wheat and a large amount of fodder for stock.

"G," six years' duration (wheat, wheat, oats and barley, clover hay, pasture, corn or roots): This also is a mixed-farming rotation and allows for one-sixth of the land being in pasture.

"H," six years' duration (wheat, wheat, summer-fallow, oats, hay, pasture): This rotation is suitable where grain growing is the principal undertaking, but hay and pasture are also required.

"I," six years' duration (flax, oats, summer-fallow, wheat, hay, pasture): In this rotation, flax is substituted for the wheat in the first year of "H."

"Q," eight years' duration (roots and peas, wheat or oats, hay, hay, pasture, pasture, pasture, green feed and rape): The land used in this rotation is poor, and is used as a sheep farm.

"W," ten years' duration (wheat, wheat, corn or roots, oats, barley, alfalfa five years): This rotation is adapted to a dairy or pure-bred stock farm, where the chief object in crop growing is the production of a large quantity of good fodder.

Crop Yields.—Wheat yielded from 5·1 to 20·3 bushels per acre, the attack of rust, of course, interfering considerably with the yields. The yields of oats varied from 26·5 to 68·3 bushels per acre, and of barley from 30·7 to 45·8 bushels per acre. Arthur peas yielded from 13 to 17 bushels per acre, and flax 14·9 bushels per acre. The yields of hay were fairly good; corn gave from 6·3 to 9·2 tons per acre, and mangels 15·4 tons per acre.

Cultural Experiments.—The following cultural work was under investigation during the year: Depth of ploughing summer-fallow and sod, summer-fallow and stubble treatment, seeding to grass and clover, breaking sod, application of barnyard manure, green manuring, seed-bed preparation, use of soil packers, commercial fertilizers.

CEREALS.

The yields of wheat were materially reduced by the disastrous rust attack, while the hot, dry, windy weather injured the oats and barley, even where they were not rusted; consequently the results from the year's work with cereals are of little value. Of three varieties of spring wheat, Marquis proved the highest yielder, with 32 bushels 30 pounds per acre. Eight of the Dominion Cerealist's varieties were also tested. Seventeen varieties of oats were tested in duplicate plots of one-fortieth of an acre each, Gold Rain giving the highest yield of 101 bushels 33 pounds per acre. This variety has given good results since first introduced, and also heads the five-year averages. Of the barleys, of which eight varieties were tested, Manchurian headed the list with 59 bushels 18 pounds per acre, and of the seven varieties of flax, Golden gave the highest yield of 20 bushels 30 pounds per acre. Mackay peas yielded at the rate of 41 bushels 40 pounds per acre. The experiment on the influence of environment on seed oats, conducted in co-operation with three United States experiment stations, was continued.

FORAGE CROPS.

The season of 1916 was moderately favourable for the production of forage crops. Hay was a good crop, and corn and mangels fairly good.

Indian Corn.—Seventeen varieties of field corn were tested, being planted on May 25 and cut September 9. Longfellow yielded 12 tons 854 pounds per acre, and the results from Northwestern Dent were also very satisfactory.

Roots.—Nineteen varieties of mangels and sugar beets were tested, and a comparison was also made between Canadian-grown and imported mangel seed, which showed that the home-grown seed was as good as the imported. Nineteen varieties of turnips gave an average yield of 13 tons 1,892 pounds per acre, and of three strains of sugar beets, the Ontario seed gave the highest yield, and also the highest percentage of sugar in the juice. The average yield of five varieties of carrots was 17 tons 140 pounds per acre.

Grasses and Clovers.—Thirteen kinds of grasses, clovers, and alfalfa were tested, and twelve mixtures of these crops were also tested under the same conditions. Baltic alfalfa, as in the previous year, gave the highest yield, 5 tons 1,120 pounds per acre.

Three acres were sown to alfalfa for seed production. For annual hay production, green oats have been most satisfactory. A test was also made of crops suitable for the production of annual pasture, rape and common grain crops such as oats and barley being found to be the best.

HORTICULTURE.

Fruits.—The only kinds of apple tree that have proven themselves reliable at Brandon are the cross-bred varieties originated by the late Dr. Wm. Saunders. Most of these again bore plentifully this year. No standard apple trees of more than six or seven years of age on the Farm are in a healthy condition. A good crop of Manitoba native plums was produced. Ten varieties of currants, two of gooseberries, eight of raspberries, and three of strawberries were grown and compared.

Vegetables.—Variety tests with different vegetables were carried out, and cultural experiments continued. With potatoes, tests of varieties and experiments with various methods of cutting and planting the seed were carried on.

Ornamental Gardening.—The trees and shrubs did well this season, and there was no winter-killing of any consequence. Variety tests with herbaceous perennials, tulips, roses and annuals were also conducted.

BUILDINGS.

A disastrous fire occurred on December 6, 1916, destroying the cattle barn, horse barn, and implement building, together with large quantities of feed, machinery, and equipment of all kinds. This was specially unfortunate in regard to the cattle barn, as operations had just been completed in connection with the overhauling and modernizing of the lower portion of the barn. The stable had been completely altered and made convenient and modern. New concrete walls had been put in instead of the old stone walls, which were crumbling apart and had become dangerous. The new concrete walls stood the fire well, and were used for a temporary stable during the winter, and will be suitable for the support of a new barn. A temporary roof of boards and straw was placed on these walls, and stalls fixed up to provide accommodation for as many as possible of the live stock.

EXHIBITIONS.

Travelling exhibits of an educational nature and illustrating the Experimental Farm work were sent out to a number of agricultural fairs throughout Manitoba. The following fairs were visited during 1916: Carman, Neepawa, Roland, Miami, Morden, Carberry, Hartney, Manitou, Waskada, Deloraine, Souris, Treherne, Minnedosa, Cartwright, Pilot Mound, Crystal City, Melita, Reston, Hamiota, Roblin, Dauphin and Stonewall. A large exhibit of a similar nature, but more comprehensive, was shown at the Manitoba Provincial Exhibition at Brandon on July 17 to 21. A horticultural exhibit was also made at the annual show of the Brandon Horticultural Society.

MEETINGS.

The superintendent addressed the annual meeting of the Manitoba Swine Breeders' Association on "Hog Pastures." No other meetings were addressed this year, war conditions making the holding of farmers' meetings very difficult.

VISITORS.

It is estimated that about 7,500 persons visited the Farm during the year.

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

REPORT OF THE SUPERINTENDENT, W. H. GIBSON, B.S.A.

THE SEASON.

The crop season of 1916 was most unsatisfactory for the production of cereal crops, in southern Saskatchewan. Forage and horticultural crops, however, produced large yields. Seeding of grain crops commenced April 24. High winds during the early part of May did considerable damage on the lighter soils, causing many farmers to reseed. Later in the season many sections suffered from the effects of hail and rust, which did inestimable damage to grain crops.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature.				Precipitation.				Total Sunshine.
	Maximum.		Minimum.		Rainfall.		Snowfall.		
	Date.	°	Date.	°	Days.	Ins.	Days.	Ins.	Hours.
April	27	77	4	0	1	0·22	3	6	120·6
May	20	80	1	14	6	2·75	.....	.....	151·8
June	9	82	19	36	10	3·63	.....	.....	222·9
July	15	90	23	40	5	1·52	.....	.....	292·2
August	8	90	25	33	4	1·18	.....	.....	272·2
September	8	80	27	24	8	3·72	.....	.....	171·4
October	13	70	19	9	5	0·25	4	21	102·8
November	5	55	12	−15	.....	.....	2	2·25	72·5
December	3	42	20	−36	.....	.....	2	7·50	39·5
January	8	40	31	−43	.....	.....	7	14·50	39·2
February	6	34	2	−50	.....	.....	4	10·0	85·6
March	29	36	3	−30	.....	.....	4	4·25	111·8
Total for year	.....	.....	.....	.....	39	13·27	26	65·50	1,682·5

LIVE STOCK.

Horses.—The horses at Indian Head Experimental Farm are pure-bred and grade Clydesdales. In conjunction with the regular farm work considerable attention is given to breeding operations. During the past year three good filly foals were raised. The usual experiments were carried on relative to the cost of keeping work horses, cheap wintering of idle horses, together with the cost of raising 3-year-old fillies. The average cost of maintaining ten work horses from April 1, 1916, to March 31, 1917, was $103.48 per horse.

Cattle.—The breeding herd at Indian Head consists of Shorthorns, the matrons at the present time conforming principally to the beef type. With the growing demand for dual-purpose cattle in Western Canada, much effort is being devoted to the production of a dual-purpose herd at the Farm, through the constant use of good dual purpose sires, and by paying the strictest attention to the dual-purpose type in the female. During the year a number of young bulls were sold for breeding purposes. Many of the cows, although conforming to beef type, are making very creditable

records as milk producers. The average cost of raising a calf from birth to 1 year old was $50.49, and of raising a heifer from 1 year old to 2 years old $21.99 on this farm.

Sixty grade steers were purchased in the fall of 1916, and divided into four lots of 15 each, for the purpose of comparing the relative merits of the straw-stack shelter, open shed, open corral, and stable as winter shelters. Each group was fed the same daily ration, and all the hay they could eat. The grain ration was made up of wheat, barley, and pea screenings, ground into meal, together with a little bran to balance the ration. Notwithstanding the severely cold winter, the steers fed outside made comparatively better gains than those fed inside, and an average profit of $17.52 per steer was realized on all lots.

Sheep.—The sheep flock at Indian Head Farm now numbers 83 and consists of pure-bred Shropshires and grades. The grading experiment which was commenced two years ago is still in progress. The cost of wintering breeding ewes was found to average $3.96; the cost of wintering range ewes, $3.85; and the cost of wintering ewe lambs, $2.41. Fifteen of the best wethers were sold soon after weaning for 8½ cents a pound, realizing, on the average, $5.78 each. Twenty poorer ones, for which 7 cents a pound was offered on October 5, were kept and sold for the Christmas market at 9 cents a pound, a profit of $13.04 over feeding being realized.

Swine.—The swine at Indian Head number 31, Yorkshires, Berkshires, and grades. All the brood sows were wintered outside, and it cost $8.45 to carry an aged brood sow, and $7.68 to carry a young sow from December 1 to March 31.

POULTRY.

Work with poultry is increasing, the breeds kept being White Wyandottes and Barred Plymouth Rocks. During the year 444 chicks were hatched by artificial incubation. A Candee coal brooder was used and gave entire satisfaction; it cost 19 cents a day for fuel while in operation.

The total number of eggs laid during the year was 11,985. Trap-nesting was carried on throughout the winter months. A pen of White Wyandottes laid 3,525 eggs, at an average cost of 15·4 cents a dozen. These were sold at an average price of 24·5 cents a dozen, thus leaving a profit over cost of feed of 9·1 cents a dozen.

A number of birds were caponized and allowed to run with the cockerels for a fattening period of three weeks, when it was found that they weighed from one to one and a half pounds heavier than the cockerels.

Seventy cockerels were crate-fed for three weeks and realized a profit over cost of feed for the fattening period of 43 cents per bird.

BEES.

The six colonies wintered in the cellar came through in good condition. Two swarms issued during the summer, but, being weak, were united with the parent colonies. The amount of honey extracted during the season was 303 pounds, and this was sold at 22 cents a pound, a profit of $16.01 being realized.

FIELD HUSBANDRY.

Rotations.—The rotations carried on at Indian Head are as follows:—

Rotation "C, three years' duration (summer-fallow, wheat, wheat). This rotation is the most commonly followed in southern Saskatchewan. The main objections to it are the depletion of soil fertility and the facilitation of the introduction of weeds.

Rotation "J," six years' duration (summer-fallow, wheat, wheat, oats, seeded down, hay, pasture).

Rotation "P," eight years' duration (summer-fallow, wheat, wheat, summer-fallow, hoed crop, barley, seeded down, hay, pasture).

Rotation "R," nine years' duration (summer-fallow, hoed crop, wheat, oats, summer-fallow, wheat, oats, seeded down, hay, pasture).

Rotations "J" "P," and "R" are all well suited to mixed-farming conditions.

Crop yields.—The yields of wheat varied between 16 bushels 16 pounds and 42 bushels 57 pounds per acre; oats, 47 bushels 23 pounds and 104 bushels 5 pounds per acre; barley, 22 bushels and 61 bushels 43 pounds per acre; and flax, 9 bushels 10 pounds and 12 bushels 29 pounds per acre. Fall rye yielded 30 bushels 20 pounds per acre and field peas 45 bushels 10 pounds per acre.

Cultural experiments.—The cultural investigational work consisted of experiments in the following: depth of ploughing, summer-fallow treatment, stubble treatment, seeding to grass and clover, breaking sod, applying barnyard manure, green manuring, seed-bed preparation, soil packers, depth of seeding, commercial fertilizers, underdrainage.

CEREALS.

The usual work with cereals was conducted on uniform test plots, sixteen sorts of spring wheat, fourteen of oats, sixteen of barley, eight of field peas, and three of flax being tested. In the five-year averages, Marquis heads the list of wheats, with an average yield of 60 bushels 54 pounds per acre; Danish Island was the highest yielding oat, with an average of 129 bushels 20 pounds; Canadian Thorpe, the highest yielding barley, 6 bushels 20 pounds; Mackay peas yielded, during the five years, an average of 49 bushels 38 pounds per acre; and Premost flax an average of 22 bushels 10 pounds per acre.

FORAGE PLANTS.

Indian corn.—Thirteen varieties of corn for ensilage were tested, and it has been found that the varieties most suitable to the Indian Head district are North-Western Dent, Early Longfellow, and Compton's Early. Free Press, Gehu, and Quebec Yellow are earlier but yield less forage. Eleven and a half acres sown to North-Western Dent corn gave an average yield of a little over 7 tons per acre.

Roots.—Twenty-two varieties of turnips, twelve of mangels, five of carrots, and three of sugar beets were grown, and in most cases gave a relatively higher yield than the previous season. An experiment to compare home-grown and commercial seed of mangels was also carried on.

Clovers and Grasses.—A series of experiments was inaugurated during the season to investigate the comparative values of the different hays and pasture grasses, the following, varieties being sown in duplicate plots of one-fortieth acre each: Brome grass, timothy, meadow fescue, tall oat grass, western rye grass, orchard grass, Kentucky blue grass, Canadian blue grass, and perennial rye grass. Three plots of western rye grass were sown for seed production, different methods of seeding being used. Nine plots of red clover were also sown for the same purpose. Experiments have shown that alfalfa is well adapted to climatic and soil conditions of southern Saskatchewan. The most suitable varieties are Grimm's and Baltic.

HORTICULTURE.

Fruits.—The fruit crop was well up to the average. Cross-bred apples gave a fair crop of fruit, and the small-fruit bushes were well loaded. The standard varieties of apples at present under test have not yet fruited, but have made a good growth and promise well.

Vegetables—The work with vegetables consisted of variety tests and cultural experiments. The potato crop promised exceptionally well, but owing to the extremely wet weather during September and October it was found almost impossible to get the tubers lifted, and a large percentage was undoubtedly lost.

Ornamental Gardening.—Annual and perennial flowers were equal to those of any past season, while the beds of tulips were exceptionally fine, both in size and colour of flowers and the length of time the flowers remained in bloom.

Trees and ornamental shrubs made a strong growth during the season, but, owing to the wet fall, the new wood was not well ripened when winter set in.

BUILDINGS.

A new poultry administration building was erected during the year, with basement suitable for incubation purposes.

EXHIBITIONS.

Two exhibits were sent out from this Farm during the past season, one operating on the Canadian Pacific Railway main line between Moosomin and Regina, and the other on the Weyburn—Estevan line and towns in southern Saskatchewan. Twelve places were visited, namely, Rouleau, Milestone, Estevan, Alameda, Oxbow, Carnduff, Weyburn, Regina, Moosomin, Wapella, Whitewood, and Wolseley.

EXPERIMENTAL STATION, ROSTHERN, SASK.

REPORT OF THE SUPERINTENDENT, W. A. MUNRO, B.A., B.S.A.

THE SEASON.

The season of 1916 may be termed an average one as to weather conditions. The precipitation for the year ending March 31, 1917, was 15·48 inches, and the average precipitation for six years ending the same date was 14·74 inches. The hours of sunshine for the year ending March 31, 1917, was 3,076·7, and the average for six years ending the same date was 2,158·2. There was an average snowfall, and the rain during the summer was well distributed, and the growing crops, including both field and garden, were promising up to August 3.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature F.			Total Precipitation.	Total Sunshine.
	Highest.	Lowest.	Mean.		
1916.	°	°	°	Ins.	Hrs.
April	72·3	− 2·6	36·7	0·69	194·3
May	79·4	18·1	46·4	2·49	193·3
June	74·6	29·5	55·7	2·15	246·0
July	87·2	43·4	64·8	3·66	293·5
August	82·5	30·4	58·5	2·45	284·1
September	77·2	22·2	49·6	0·68	183·1
October	64·8	9·6	36·2	0·81	116·2
November	50·0	− 5·3	23·8	0·20	108·5
December	37·1	−32·2	2·6	0·15	94·0
1917.					
January	34·5	−38·0	−9·25	0·95	75·0
February	34·2	−44·8	−6·93	0·9	140·3
March	36·3	−34·0	14·06	0·35	148·4
Total				15·48	2,076·7
Average for years 1911-12-13-14-15				14·59	2,174·5
Total for five growing months, April to August, 1916				11·44	1,211·2
Average for five growing months, 1911-12-13-14-15				9·666	1,280·56

THE HAIL-STORM.

The morning of August 3, 1916, was bright and hot, succeeding several days of very hot, dry weather. About noon heavy clouds began to appear in the west, and later these were rolling in different directions, some from the northwest and some from the southwest, and about 2 o'clock hail fell, driven by a strong northwest wind. The duration of the storm was just ten minutes. The width of the area affected was approximately six miles, and the general trend was ENE. So far as information can be gathered, the storm had its origin somewhere in Alberta, and swept a path all the way across the province of Saskatchewan to an indefinite region in northern Manitoba. Its path was not straight and was not single. It seems to have divided at different places. Nor was the direction of the wind the same in all places. At the Experimental Station the wind was from the northwest, and 2 miles south of the Station there was one large house with all windows broken on all sides, evidently indicating a whirlwind in the storm. This house stands about two miles north of the southern edge of the storm area. One hail stone measured 2 inches across, which was a fair average, and may be described as being the shape of a curling stone, i.e., rather flat than spherical.

At the Experimental Station, all grain crops were completely destroyed. Some of these crops were either driven completely into the ground or broken off and carried away by the wind, leaving only the rows of tops of the grain roots exposed. In other places the grain was broken off below the heads and the straw left in a tangled mass, while in other places there were all stages between these two extremes. Where the grain was completely cut off or driven into the ground there was no trouble experienced in going right on the land with a plough, but where it was left in a tangled mass it had to be raked, then mown and raked again to be either burned or hauled away. It could not be

burned before being cut because of the immediate growth of green stuff underneath, which left the tangled mass too damp for burning.

The potato stalks were killed to the ground, and although the potatoes did not rot, both the yield and the quality were unsatisfactory.

The leaves of all root crops were broken off at the ground. The beets and mangels rotted at the crown in storage, the carrots and turnips developed new tops, but by the time frost came had not started to enlarge at the roots and at harvest time there was no more yield of turnips and carrots than there would have been at the time of the hail-storm.

Much damage was done to shrubs and trees. The northwest sides of the trees were bruised so that the bark was left open in spots to the wood, and sometimes these spots were so close together that the circulation on the exposed side of the trees was altogether stopped. In bad cases it presented a little of the appearance of sun-scald. In this district there are many bluffs of poplar trees, about 40 feet high, and any that were in the path of the storm presented a late-autumn appearance, being very much denuded of leaves.

The damage was not confined to vegetation. Numbers of blackbirds and meadow larks were found dead immediately after the storm, and the next day numbers of the same kinds of birds were hopping about with broken wings, and one dead rabbit, evidently killed by the storm, was found. There was a large number of poultry killed in the district, and wild ducks were found dead on the edges of the ponds. The horses that were in the fields became frantic, and there were two run-aways on the Experimental Station.

LIVE STOCK.

Horses.—The horses include fourteen head of work horses and two drivers. One mare died of colic in September, but all the others have been in good condition throughout the year.

Cattle.—The herd has increased to twelve head, including a Holstein bull sent from the Central Experimental Farm at Ottawa. The cows include two pure-bred Holsteins, one grade Holstein, and two grade Shorthorns. Besides the dairy cattle, seventy-three steers were purchased in October for feeding purposes. These were fed in four lots during the winter, to test the value of hailed-out straw.

Sheep.—From the one hundred ewes and three rams purchased in November, 1915, there was a total of one hundred and seventy-five in the fall of 1916. Out of these, thirty-three wether lambs and twenty-seven old ewes were killed and dressed, leaving a larger and better flock than at the beginning. The sale of the wool through the Co-operative Organization Branch of the Saskatchewan Department of Agriculture was very satisfactory.

FIELD HUSBANDRY.

Besides the regular experimental work, a great deal was done in further bringing into proper condition the land purchased two years previously. The great task is checking the wild oats, and attempting to eradicate them. The quarter section that had been summer-fallowed in 1915 was sown to oats and barley and showed a much-diminished growth of wild oats; the quarter section that was cropped since fallowing was twice ploughed shallow in the spring and sown late to oats, and the third quarter was fallowed. After the hail-storm a tractor was purchased and about one hundred acres ploughed with it.

CEREALS.

There were under test in 1916, seventeen varieties of wheat, twenty of barley, twelve of oats, and thirteen of peas. These were all doing well until destroyed by the hailstorm on August 3. One plot of Marquis wheat sown on November 6, 1915, was doing particularly well.

FORAGE PLANTS.

All forage crops were promising a good yield in 1916 till the time of the hail-storm on August 3. Some of the hay had been harvested, but the remainder was all destroyed. All root crops were so injured that the yields were unreliable for comparison, and the corn was ruined. Millet was tried for the first time, and was not promising.

HORTICULTURE.

Fruits.—The plums continued to make good growth, but many of the apples trees suffered severely from winter-killing. A few quarts of apples were obtained from some of the trees.

The strawberries and raspberries suffered somewhat from winter-killing, but the currants proved hardy. Some gooseberries bore for the first time since the Station was established.

Vegetables.—The whole vegetable garden was very promising till it was destroyed by hail. The tomatoes especially were a very promising crop.

The results in potatoes were quite different from what they were in previous years, which may be accounted for by the stalks being destroyed by the hail before the potatoes were mature.

Ornamental gardening.—The flower border, and especially the perennial border, is becoming better every year. The display begins with tulips early in May and ends with asters in the autumn. The shrubs planted along the driveway are becoming well enough developed to show the advantage of their massed effect.

BUILDINGS.

When three quarter-sections of land were added to the Experimental Station the buildings were not adequate to the necessary extra live stock and equipment, and during 1916 some additions were made. The barn, which had been arranged to accommodate eight horses and five cattle and allow a driveway and room for several rigs, was rearranged to hold nineteen horses in stalls and two in a box stall.

The old stable that was on the farm at the time of its purchase in 1908 was temporarily arranged to accommodate ten cattle, and equipped with adequate ventilation.

A new implement shed, 24 feet by 80 feet, 7 feet at the back and 10 feet at the front, was built which, together with the former building, 20 feet by 80 feet, affords sufficient accommodation for the implements and machines.

A sheep barn, 20 feet by 68 feet, with 12-foot posts was built. This is large enough to accommodate about a hundred sheep.

EXHIBITIONS.

A large exhibit displaying various phases of the work of the Experimental Station was assembled and shown at thirteen fairs.

EXPERIMENTAL STATION, SCOTT, SASK.

REPORT OF THE ACTING SUPERINTENDENT, M. J. TINLINE, B.S.A.

SEASONAL NOTES.

The season of 1916 was wet and cool. The precipitation of 16·88 inches for the six growing months is much above the average. Cold weather continued up to May 6. Seeding only commenced on April 20, almost a week later than usual, but while crops of all kinds were late starting, they made good progress during the early summer. Hail-storms were more prevalent than usual, and did much damage in some districts. A frost on August 11, followed a few days later by three days of wet weather, did serious damage to the wheat crops, in many districts. Cool, wet weather during the late summer delayed harvest operations, and a number of fields were injured by a frost on September 14; threshing operations were also much delayed, and a considerable percentage of the grain crops was not threshed until November. The ground froze too hard for cultivation on November 4.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature F.		Precipitation.			Total Sunshine.
	Highest.	Lowest.	Rainfall.	Snowfall.	Total.	
	°	°	Inches.	Inches.	Inches.	Hours.
1916.						
April	74·2	9·1	0·25	0·27	0·52	178·8
May	77·8	17·8	2·54	.....	2·54	200·7
June	78·0	32·3	4·25	.....	4·25	254·5
July	87·0	38·0	4·04	.....	4·04	286·8
August	83·0	30·2	3·87	.....	3·87	254·0
September	78·0	20·4	1·66	.....	1·66	138·7
October	49·0	23·7	0·10	0·40	0·50	123·9
November	63·8	− 2·2	.....	0·05	0·05	116·6
December	47·2	−31·8	.....	2·5	2·5	104·0
1917.						
January	43·2	−41·0	.....	0·60	0·60	78·3
February	40·0	−48·8	.....	0·15	0·15	127·4
March	37·8	−31·2	.....	0·03	0·03	194·3
Total for the year	.....	.....	16·71	4·00	20·71	2,058·0

LIVE STOCK.

Horses.—There are now seventeen horses on the Scott Station, two colts having been foaled in 1916. Records are kept of the time horses were at work, and the cost of food, etc., for the year. Experiments on wintering idle horses, cost of raising horses, and feeding methods, were continued.

Cattle.—One grade Shorthorn cow and calf are kept at this Station for the purpose of supplying the employees with milk. Two carloads of steers were purchased in the fall for feeding experiments. One lot is being fed in a frame shed, the other lot in a high-board corral.

The herd of cattalo continued in good condition throughout the summer. Late in December they were shipped to the Buffalo park, Wainwright. No increase in the herd took place during the year.

Sheep.—The lamb crop was lower than usual, and severe losses were also sustained from the depredations of dogs. A good crop of wool was secured, the average weight per fleece amounting to 8½ pounds.

Swine.—Six Berkshire sows and a Berkshire boar were kept at the Station, and were housed in two portable hog cabins. The average cost of feed per sow for the six months ending March 31, 1917, was $5.98.

FIELD HUSBANDRY.

Rotations.—An investigation into the best kinds and arrangements of crops for rotations suitable to northwestern Saskatchewan continues as one of the most important lines of work at this Station. The following rotations are being tested:—

Rotation "A," wheat continuously: An anthracnose disease appearing in the field taken up by this rotation made the yield unusually low.

Rotation "C," three years' duration (summer-fallow, wheat, wheat).

Rotation "J," six years' duration (summer-fallow, wheat, wheat, oats seeded down, hay, pasture): This rotation has, since its inauguration, produced uniformly substantial revenues, the average profits for the past five years being $8.18 per acre. It is planned to try this rotation on a more extensive scale, using six 20-acre fields.

Rotation "P," eight years' duration (summer-fallow, wheat, wheat, summer-fallow, peas, barley, hay, pasture): This rotation is intended for a farm where diversified farming is carried on.

Rotation "R," nine years' duration (summer-fallow, peas, wheat, oats, summer-fallow, wheat, oats, hay, pasture): The profit per acre from this rotation in 1916 was $13.04.

Crop Yields.—Marquis wheat, on breaking, gave a yield of 41 bushels 51 pounds per acre: and Victory oats, on breaking, 113 bushels 7 pounds per acre. O.A.C. No. 21 barley yielded 55 bushels per acre; and Arthur peas, on summer-fallow, 36 bushels 13 pounds per acre. The yield of early potatoes averaged 202 bushels 20 pounds per acre. The yields of hay and field corn were fairly good.

Cultural Experiments.—Experiments in cultural work included the following: Rates of seeding wheat and oats; dates of seeding wheat, oats, barley, and flax; prairie breaking; summer-fallow and stubble treatment; seeding down to grass and clovers; use of barnyard manure; green manuring; depth of seeding; seed-bed preparation.

CEREALS.

The system of making duplicate tests of all varieties of grain was followed. A uniform stand of all kinds of grain was secured. The flax crop was injured by the August frost, while late-maturing varieties of wheat, including Red Fife, were caught by the frost on September 14.

On the seed plots, good crops were secured. A 30-acre field of Marquis yielded 41 bushels 50 pounds per acre. Victory and Banner oats yielded 113 bushels and 111 bushels per acre, respectively. In addition, Ligowo oats, O.A.C. No. 21, Manchurian and Black Japan barleys, and Arthur peas were grown to supply seed for the Station and to sell to farmers in limited quantities. In all, seventy farmers were supplied, and a total of 1,600 bushels sold for seed purposes.

FORAGE CROPS.

Indian Corn.—Variety tests with Indian corn were again conducted. Eleven varieties were tested, the yields ranging from 2 tons 1,633 pounds to 7 tons 1,293 pounds, per acre, Salzer's North Dakota being the heaviest yielder.

Roots.—Of the root crops, turnips gave yields varying from 17 tons 1,975 pounds to 39 tons 550 pounds per acre, twenty-five varieties being tested; the yields of the thirteen varieties of mangels were from 230 bushels to 580 bushels per acre; three varieties of sugar beets yielded, on the average, 177 bushels per acre; and five varieties of carrots ranged in yield from 106 bushels to 253 bushels per acre.

Grasses and Clovers.—Variety and soil cultural tests were carried out with alfalfa, Grimm's proving the best yielder. Variety tests were also carried out with grasses and clovers. Good crops of hay were secured from old hay fields, but the crop from the 1915 seeding was light.

HORTICULTURE.

Owing to the severe winter, loss of shade trees, apple trees and perennial flowers was very heavy. Some 13 degrees of frost was recorded on September 14. Cuttings made from the willows and poplars in November showed frost damage. Many of the more tender kinds failed to grow. Warm weather for two weeks in February, followed by a cold March, may have aggravated the injuries received in the fall. The spring of 1916 was late, and no doubt many of the trees would have survived had the spring been favourable.

From an experimental standpoint, the losses sustained are well worthy of consideration, since hardy varieties came through with little damage, and the more tender kinds were in many instances killed out.

Small Fruits.—The hardy kinds of fruit bushes made a splendid showing during the past season; the cultural experiments with the different kinds of fruits have been continued, and a good crop of black currants, gooseberries, and raspberries was secured, while the yields from the red and white currants and strawberries were not so satisfactory.

Ornamental Gardening.—In the flower garden, flowering bulbs and annual flowers made a splendid showing. Pæonies and iris are two of the hardiest kinds of perennials under test.

FARM IMPROVEMENTS.

Buildings.—A sheep shed, 24 by 67 feet, was built. This building is one story, frame, with a shingle roof; the walls were sheathed with rough lumber, using battens to cover the joints. Ample light was provided for. The importance of dryness, plenty of light, and sufficient ventilation for sheep cannot be overestimated.

Fencing.—Over half a mile of woven wire fencing was erected. The dam in the ravine in the pasture was built higher. Later in the autumn approximately half a mile of roadway was graded up.

EXHIBITIONS.

An exhibit from the Station was displayed at Saskatoon, Plenty, Kerrobert, Kindersley, and Alsask.

MEETINGS.

Changes in the staff on the Station have prevented as much extension work as was done in previous years. During the season, however, the Acting Superintendent

addressed several meetings held by farmers' organizations. He placed the awards at a school fair held at Cut Knife, and assisted in judging the horticultural exhibit at the Wilkie fair. During the harvest season he inspected numerous fields of wheat in the surrounding district to determine the extent of injury from the frost and wet.

EXCURSIONS.

During the midsummer months the following farmers' organizations held picnics at the Station: Scott Farmers' Club, East Prospect Grain Growers' Association, Wilkie Agricultural Society. In addition, the Narrow Lake Homemaker's Club and two Sunday Schools were entertained. A total of 1,000 persons attended these gatherings.

VISITORS.

It has been estimated that 2,636 persons visited the Station during the year 1916-17.

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

REPORT OF THE SUPERINTENDENT, W. H. FAIRFIELD, M.S.

THE SEASON.

The precipitation during the growing season was unusually heavy for southern Alberta. All cereals, roots, and other grains did better than the average; especially was this true of the wheat crop. Coming, as it has, right after 1915, which was in itself a marvellous growing year, 1916 has enabled this part of the country to set a high-water mark for two consecutive seasons' production which, to say the least, have been remarkable.

The months of January and February of 1916 will long be remembered for the severe cold spell which lasted from the 8th of January to the 12th of February, with scarcely a day when the temperature rose above zero. For the month of January the average mean temperature was 9 degrees below zero. Just before the cold spell set in there was a fall of snow all over the country, and this remained without drifting until the "Chinook" came. Then a week's very mild weather melted the snow without taking it all off into the air, and the whole prairie was covered with sloughs and ponds.

Work on the land was commenced as early as March 10 on a few farms in the district, and became quite general by the last of March. The first surface cultivation of the land done on the Station was on March 21, and it was on this date that the first seeding was done.

Heavy winds during April and May caused soil drifting, and the spring was backward and cold right through May, with no rainfall till the 22nd. Up to that time, while most of the crops were up above the ground, they had made little noticeable growth. After May 22, rains of three and four days' duration were quite frequent. The total precipitation for April, May, and June was 7·77 inches. During July and August, seasonably warm weather hastened the crops along to maturity. The last frost in the spring was on May 18, when 31·6 degrees was recorded. The first frost in the fall was September 14, 31·2 degrees being recorded.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature F.			Precipitation.	Sunshine.
	Mean.	Maximum	Minimum		
	°	°	°	Inches.	Hours.
1916.					
April	44·35	78·1	18·5	0·46	230·3
May	46·95	77·2	22·0	3·77	230·2
June	56·1	63·2	32·6	3·54	225·9
July	63·6	89·0	40·0	3·33	291·4
August	60·0	84·0	35·2	2·97	333·8
September	52·77	78·1	24·0	4·66	161·4
October	39·39	75·0	18·0	1·99	180·2
November	32·25	63·0	−17·5	0·49	140·8
December	12·0	50·0	36·0	0·51	96·1
1917.					
January	13·1	48·5	−41·8	0·73	80·9
February	11·1	53·5	−41·5	0·27	96·7
March	26·3	59·0	17·0	0·10	153·5
				22·82	2,221·2

LIVE STOCK.

Cattle.—Twenty-seven 2-year-old steers were purchased locally, divided into three lots, and fed in the open. The two main objects were to compare alfalfa hay as a roughage with a mixture consisting of three-fourths alfalfa and one-fourth green feed, and to compare the profits derived from long and short feeding. The meal ration of the first lot, which, like the second lot, was fed alfalfa hay and green feed as a roughage, was increased more rapidly than the other two lots, the feeding period being 95 days, while for lots 2 and 3, the feeding period was 154 days. The short-feed steers made a net profit per head of $22.71, sold at $9.68 per 100 pounds and cost 19 cents to produce 1 pound gain, while the long-feed steers on the same rations made a net profit of $26.63 per head, sold at $10.70 per 100 pounds, and cost only 16 cents to produce 1 pound gain. The two lots fed the same length of time on different roughages confirmed the previous findings, that alfalfa hay and green feed gave slightly higher gains and more satisfactory returns than alfalfa hay alone.

Sheep.—Two cars of range lambs were purchased in October, 1915. Half of them were fed until March, and then disposed of at $9.72 per hundredweight. The remainder were kept for shearing, and sold in May at $9.75 per hundredweight, $411.92 being received for the wool, the average weight of each fleece being 5·6 pounds. The net profit on the short-feed lambs was $1.76 per head, while for those sold in May the net profit was $3.12 per head.

A flock of one hundred range ewes was purchased in November, with a view to grading up by using pure-bred Shropshire sires, and also to ascertain whether it is possible to maintain grade sheep on pastures of cultivated grasses.

POULTRY.

The flock at Lethbridge is composed of the Barred Rock and White Leghorn breeds, the former appearing to be the more suitable breed for Lethbridge conditions. There were 472 chickens raised to maturity in 1916. Most of them were raised in the Candee coal-stove brooder. In a laying test between 45 Barred Rock pullets and an

equal number of hens of the same breed, all being fed alike, the pullets laid 589 eggs in three months, and the hens only 85. The pullets are all trap-nested, and those making the poorest returns disposed of, the better ones being retained for breeding purposes.

BEES.

The results from the apiary in 1916, were not quite so satisfactory as the previous summer. Three hives that were wintered in the cellar came through in much better condition than the two wintered in cases outside. One more colony was made by division, and swarming was prevented by cutting away all queen cells formed. The total amount of honey extracted was 172 pounds, and was sold at 17 cents per pound.

FIELD HUSBANDRY.

Rotations.—In connection with the work with rotations, there have been no striking results obtained during the past season. The following rotations are under test:—

Rotation "A": Wheat continuously.

Rotation "B"; Two years' duration (wheat, summer-fallow).

Rotation "C": Three years' duration (summer-fallow, wheat, wheat or coarse grain).

Rotation "M": Six years' duration (summer-fallow; wheat; coarse grain, manured in fall; summer-fallow; peas and oats for hay; barley or oats).

Rotation "S": Nine years' duration (summer-fallow; hoed crop; wheat; summer-fallow; wheat; coarse grain; summer-fallow, manured; peas and oats for hay; rye pasture).

Rotation "T": Ten years' duration (summer-fallow; wheat; oats or barley; seeded to alfalfa; alfalfa hay or seed; alfalfa hay or seed; alfalfa hay or seed; summer-fallow; hoed crop; wheat, manured in fall).

The following rotations are irrigated:—

Rotation "U": Ten years' duration (seeding alfalfa; alfalfa for five years; hoed crop; wheat; oats; barley).

Rotation "V": Alfalfa continuously.

Rotation "X": Fifteen years' duration (seeding alfalfa; alfalfa for nine years; barley; corn; wheat; oats; peas).

Crop yields.—The yields of field crops in all cases were particularly high, with the exception of alfalfa hay on the irrigated land, which was distinctly lower than normal, owing, no doubt, to the fact that the large number of cloudy, rainy days interfered with its rapid growth, for on irrigated land, where the moisture is supplied artificially, alfalfa produces the greatest tonnage in seasons which have the greatest number of sunshiny, hot days.

Cultural experiments.—The following is a brief summary of the results obtained from the cultural experiments carried on during the five years just past:—

In the "summer-fallow treatment" 8-inch ploughing in June gave better results than shallower ploughing. The average yields of wheat for five years from 4-inch, 6-inch, and 8-inch ploughing are, respectively, 31·9 bushels, 34·2 bushels, and 36·8 bushels. When a crop of rape was raised on the land and pastured off, in lieu of summer-fallow, the yield was reduced approximately 10 bushels per acre. Of the plots ploughed for fallow May 15, June 15, and July 15, the one ploughed June 15 gave the highest average yield, and July 15 the lowest. In the "applying manure" experiment, applying manure after the crop is sown in the spring has given good results with wheat, oats, and barley. In the "green manure" experiment there is no apparent advantage in ploughing under a green crop. It has reduced the yield in every case. In the

"seed-bed preparation" experiment, the better the preparation given the greater the crop obtained. In the "packing experiment," the subsurface packer gave better results than either the surface or combination packer. In the "depth of seeding" experiment, where the seed is sown 1, 2, 3, and 4 inches deep, that sown 2 inches and 3 inches deep gave better returns than the plots put in either 1 or 4 inches deep. Spring ploughing, on the average, gave better results than fall ploughing.

The results of a five-year experiment in which wheat, oats, barley, and flax were sown at ten days' to two weeks' interval would indicate that, at Lethbridge, the latest date at which it is possible to sow these grains on fallow, with a reasonable assurance that they will ripen before frost, is as follows: Wheat, May 12; oats, May 24; and flax, about May 24 or 25; barley, June 1.

CEREALS.

Excellent crops of all the cereals were obtained. The yields, although not quite so heavy as in 1915, were nevertheless, very much better than normal. Of sixteen varieties of spring wheat tested, Huron yielded 77 bushels 15 pounds per acre, the average yield for the past four years of this variety on irrigated land having been 64 bushels 24 pounds per acre. Danish Island oats yielded 159 bushels 24 pounds per acre, and Invincible barley 99 bushels 3 pounds per acre. Chancellor peas gave 57 bushels per acre; and Montana flax, 20 bushels 20 pounds per acre. Silver Hull buckwheat gave 45 bushels 30 pounds per acre, and spring rye 52 bushels 43 pound per acre.

FORAGE PLANTS.

Indian Corn.—Thirteen varieties of Indian corn gave an average yield of 9 tons 835 pounds per acre; the highest, Salzer's North Dakota, yielding 14 tons per acre.

Roots.—The turnips on the non-irrigated area gave an average crop of 34 tons 1,178 pounds per acre, and on the irrigated area, 25 tons per acre. Eleven varieties of turnips were under test. The irrigated area sown to mangels gave a crop of 19 tons 1,904 pounds per acre, and the non-irrigated area 19 tons 1,965 pounds per acre. Experiments showed that medium-sized mangel seed gave larger returns than either small or large seed. An experiment comparing home-grown and commercial mangel seed was not conclusive. On the irrigated area, five varieties of carrots gave an average yield of 18 tons 1,770 pounds per acre, while on the non-irrigated area only 1 ton 1,630 pounds per acre was obtained. Four varieties of sugar beets were also tested.

Grasses and clovers.—Alfalfa, which is the main hay crop on the irrigated lands in the Lethbridge district, did not yield as well as usual. Winter-killing was observed to a limited extent. The quality of hay obtained was better than in 1915.

HORTICULTURE.

Fruits.—Practically all apple trees old enough to produce, except the crab-apples, winter-killed. Plum trees stood the winter well and bloomed freely, but an untimely frost allowed little fruit to set. Currants, raspberries, and strawberries did not produce as well as usual, and the berries were smaller.

Vegetables.—The usual variety tests with vegetables were continued, and various cultural experiments were also carried on. On the non-irrigated area, Gold Coin potatoes gave a yield of 570 bushels per acre, 530 bushels of which were marketable. In the four-year averages this variety also heads the list.

Ornamental Gardening.—Many varieties of annuals, herbaceous perennials, and bulbs were grown. A number of trees and flowering shrubs were seriously affected by the severe winter.

NO IRRIGATION NECESSARY.

Again in 1916 as in the season previous, the generous rains that came during the time the crops were growing made irrigation unnecessary for general field crops on the irrigated part of the farm. It is remarkable to have two seasons in succession with the rainfall such that the application of water to the growing crop would not increase the yield. In the last fifteen years there have been only three seasons, 1902, 1915, and 1916, when such has been the case in the Lethbridge district. During the season just past, however, the crops on the hay and grass lands were greatly improved in yield by irrigation in early May.

EXHIBITIONS.

The Lethbridge Experimental Station again sent an exhibit to the following thirteen fairs in southern Alberta: Calgary, High River, Nanton, Claresholm, Stanley, Vulcan, Carmangay, Macleod, Gleichen, Raymond, Cardston, Taber, and Grassy Lake.

EXCURSIONS AND VISITORS.

Three excursions or farmers' picnics were held in July. Arrangements were made with the Canadian Pacific to run special trains to and from the Station on July 18 from Medicine Hat, on the 19th from High River, and on the 20th from Calgary via Alderside. On the first day rain started early in the morning, but on the other two days the weather was fair. In all there were 800 fares collected on the trains. During the year there has been a large number of people visit the Station; over 2,610 have been counted, although there were doubtless many more than this.

EXPERIMENTAL STATION, LACOMBE, ALTA.

REPORT OF THE SUPERINTENDENT, G. H. HUTTON, B.S.A.

THE SEASON.

The spring of 1916 was favourable for an early commencement of work on the land, the first seeding of wheat being done on April 10, and practically all seeding being concluded before the first of May. The temperatures during the growing season were below normal, and this fact, together with an unusually heavy precipitation, delayed the maturity of crops considerably beyond the average date for the commencement of harvest, and also interfered with the harvest operations. A frost on August 10 did damage on certain areas. It seemed to pass over the country in well-defined waves, and those districts which were in the trough of these frost waves, suffered to quite an extent. Fortunately most districts contained areas which escaped, and from these, seed for the coming year has been obtainable. Even where frosted, the grain has been used to excellent advantage for feeding stock, and has been marketed through that channel at a price above the average for No. 1 grades. Because of the difficulty experienced in harvesting crops, little fall ploughing was done. The winter of 1916-17 has been cold and windy, with the result that heavy demands have been made by all classes of live stock on the feed supply. Indications are that work on the land in the spring of 1917 will begin much later than usual.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Max.	Date.	Min.	Date.	Precipitation.	Sunshine.
	°		°		Ins.	Hours.
1916.						
April	71·8	26	17·9	22	0·600	201·1
May	71·8	2	19·9	9	2·043	179·3
June	77·9	17	28·8	3	3·570	198·1
July	82·8	16	36·1	5	4·311	229·5
August	82·8	13	28·9	11	5·218	253·0
September	76·8	17	23·4	28	3·055	176·0
October	74·7	15	16·9	28	1·013	138·6
November	56·3	2	−18·1	12	0·400	122·0
December	44·0	2	−40·2	27	0·400	94·3
1917.						
January	42·8	8	−49·8	31	0·75	73·8
February	42·3	14	−45·7	1	0·52	119·1
March	48·3	4	−14·9	3	0·33	184·1
					22·21	1,968·9

LIVE STOCK.

Horses.—The horses at the Lacombe Station number twenty-six, and include five pure-bred Clydesdales and two pure-bred Percheron mares. The cost of carrying three colts, rising 2 years old, for one year, amounted to $53.06 each, the colts making average gains of 433·3 pounds each during the year. All the horses not required for work were turned out in the fall, and fed straw during the winter. All the horses lost weight, but since straw only was fed, the cost of feed for the winter amounted to only 4 cents a day.

Dairy Cattle.—There are now twenty-three pure-bred Holstein cattle in the dairy herd. The milk flow has been maintained up to a profitable point, and the health of the cattle improved by the use of a succulent ration of ensilage made from peas and oats. During the winter months all the milk was manufactured into Cheddar cheese, the average returns per cow being $167.12.

Beef Cattle.—The herd of Aberdeen Angus cattle comprises twenty-nine head. An experiment to discover the cost of gains made by young cattle on pasture showed that in eight months these cattle made average gains of 256 pounds each at a cost per pound gain of 3·39 cents.

Twenty-two steers, rising 2 years old, were run on a fenced section from May 24 to October 19, and made an average gain of 318 pounds per head. Two car-loads of 2-year-old steers were fed during the winter. Both received similar rations as regards bulky fodder, but one lot was fed a ration of frosted wheat, while the other was fed a grain ration consisting of equal parts of oats and barley. The group fed on frosted wheat made a net profit per head of $3.38 more than the group fed oats and barley, thus seeming to show the superiority of the former feed as a grain ration over the latter.

Sheep.—In 1916 seventeen lambs were raised from sixteen common grade ewes, the flock now numbering forty-five. The ewes from the first cross of Shropshire blood on range stock in the grading-up experiment are being bred for the first time in 1917. The first cross weighed, when eighteen months old, an average of 6 pounds each more

than their dams, and when fully matured will probably show an increase of from 15 to 20 per cent.

The wool yield appears to be improved in that it carried a reduced grease content and increased length of staple. The wool sales for the year amounted to $107.63.

Swine.—An experiment to determine the relative value of barley, wheat, sweet clover, rape, and alfalfa for hog pastures was carried on during the year. The alfalfa and rape produced the most economical gains, and carried 1,518·9 pounds and 1,786·1 pounds of hogs per acre, respectively. Since there has been considerable inquiry as to the value of whey for hogs, an experiment was carried on for the purpose of securing information covering this point. It was shown that 100 pounds of sweet whey fed to hogs ranging in weight from 50 to 150 pounds, effected a saving of 19·146 pounds of grain.

Hogs on the self feeder versus a group fed a 3 per cent grain ration showed much more rapid gains, though this year gains were made at greater grain cost. The hogs on the self feeder showed tremendous time saving, amounting to 51 days in a 92-day test. Self-fed frosted wheat, valued at $1 per bushel, produced pork during the winter months at a cost of 7·62 cents per pound, while oats valued at 43 cents and barley at 80 cents per bushel, and fed in equal parts through a self feeder, cost 8·9 cents for 1 pound of pork. The cost of wintering sows has been shown to be $20.90, and the cost of pigs at weaning time, estimating six pigs to the litter, figures out at $3.48 for aged sows and $2.99 for gilts with first litters.

POULTRY.

The stock of poultry at Lacombe consists of 70 hens, 126 pullets, 36 cockerels, 4 cocks, and 8 capons of the Barred Plymouth Rock, White Wyandotte, and S.C. Rhode Island Red breeds, 9 geese, 1 duck, and 4 turkeys. The number of eggs set was 3,257, and from these 1,612 chicks were hatched in a Candee incubator. Satisfactory yields of eggs were secured during the winter, the cost to produce being 17·2 cents per dozen. Trap-nesting showed that a pen of White Wyandotte pullets gave an egg yield of 60·2 per cent during the four winter months. During the year losses were experienced among the ducks, due to foxes, and among the turkeys from blackhead.

BEES.

Of the four colonies put away in November, three were alive and strong when removed from the cellar in April, the three living colonies having consumed an average of 23 pounds of honey during the winter. Two queen bees were imported, and nuclei made to receive them. The honey yield amounted to 70 pounds and sold at 20 cents a pound, the total profit on the apiary for the year being $10.45. Six colonies were removed to their winter quarters on November 4.

FIELD HUSBANDRY.

Rotations.—The profits from the rotations were lower than usual this year, owing to the frost which reduced the yields.

Rotation "C," three years' duration (wheat, wheat, summer-fallow): The results from this rotation show the folly of depending on one crop, especially in this section of Alberta.

Rotation "L," six years' duration (hay, pasture, pasture, wheat, oats, barley seeded down).

Rotation "K," six years' duration (hoed crop; peas or mixed grain, wheat, oats or barley, seeded down; hay, manured in autumn; pasture; pasture): This mixed-

farming rotation is similar to "L," except that a crop of roots is grown in place of one grain crop.

Rotation "O," seven years' duration (hoed crops, or peas and oats; wheat; oats; summer-fallow; barley, seeded down; hay, manured in fall; pasture).

The main farm rotation is of six years' duration, the rotation years being hay, pasture, pasture, oats, barley seeded down to grass. This rotation is carried on on an area of 215·6 acres.

Cultural Experiments.—The following experiments in cultural investigation work were carried on: Depth of ploughing, summer-fallow treatment, seeding to grass and clover, breaking sod, application of barnyard manure, green manuring, depth of seeding.

The results secured from a number of these experiments were rendered of no value, due to the frost of August 10. In spite of the loss of information along some lines, however, the advisability of deep ploughing, the uselessness of double ploughing of summer-fallows in this section, and the advisability of breaking sod early in the season, were again demonstrated.

CEREALS.

Seventeen varieties of spring wheat were sown in duplicate plots at the rate of 3 bushels per acre, Huron producing the highest yield, 57 bushels per acre. One plot of spring rye gave a crop of 49 bushels 6 pounds per acre, the threshed grain weighing 56 pounds to the measured bushel. Of the fourteen varieties of oats grown, Gold Rain gave the highest yield, 131 bushels 6 pounds per acre; and of the ten barleys, Gold, although taking longer to mature than some of the lower-yielding varieties, gave 70 bushels 20 pounds per acre. Arthur proved the earliest-maturing variety of peas tested, and yielded 28 bushels 50 pounds per acre No flaxseed matured, as it was caught by the frost of August 10.

FORAGE PLANTS.

Indian Corn.—Twelve varieties of corn were planted, but the crop failed to produce a yield of commercial value.

Roots.—Twenty-four varieties of turnips were tested, the yields ranging from 12 tons 150 pounds to 25 tons 950 pounds per acre. Of the fourteen varieties of mangels, Giant Yellow Globe, the highest yielder, produced 9 tons 550 pounds per acre. In an experiment to compare home-grown and commercial mangel seed, only the seed secured from Agassiz grew. Five varieties of carrots were sown, Giant White Vosges giving a yield of 10 tons 1,650 pounds per acre. A test of sugar-beet seed obtained from different sources was also carried on.

Grasses and Clovers.—In a comparison made between seeding alfalfa broadcast and in drills, it was found the average yield for three years of the alfalfa sown broadcast was 4,547 pounds per acre, while for that sown in drills the yield was only 3,718 pounds per acre.

Thirty-four plots of one-fortieth acre each, were sown to the following varieties of grasses and clovers: red clover, alsike, alfalfa, timothy, awnless blue grass, Kentucky blue grass, meadow fescue, red top, orchard grass, and western rye grass. An acre of unploughed prairie sod was seeded to Kentucky blue grass, and a successful stand secured.

HORTICULTURE.

Fruits.—For the fourth year in succession, a crop of crab-apples was secured. Many of the standard apple seedlings were winter-killed. The currant plantation has not yet reached its maximum productiveness, and consequently the yields were

light. Gooseberries gave a light crop, Herbert again proved the best variety of raspberries, and strawberries gave a satisfactory yield.

Vegetables.—The usual variety tests with vegetables were again carried on and cultural tests with beets, cabbage, carrots, onions, parsnips and peas were continued. A test of home-grown and commercial peas showed that the home-grown stock can be relied upon to produce results equal to those from commercial seed. Variety tests and cultural experiments were also carried on with potatoes. It was found that to produce 1 acre of potatoes, yielding 233 bushels 45 pounds, the cost was $42.35.

Ornamental Gardening.—Variety tests were carried out with annuals, herbaceous perennials, and bulbs. The severe winter of 1915-16 caused great loss among the trees and shrubs.

BUILDINGS.

A new wood-and-coal shed 12 feet by 16 feet, with accommodation for the bone cutter and engine, was erected in the poultry plant. No floor was put in except for the coal bin and a closet. The entire cost of this building, including painting, was $114.23.

EXHIBITIONS.

An educational exhibit was shown by this Station at the following points: Calgary, Provost, Edmonton, Vegreville, Red Deer, Camrose, Three Hills, Wetaskiwin, Swalwell, Didsbury, Rocky Mountain House, Innisfail, Sedgewick, Olds.

It is estimated that 18,640 persons were interested directly or indirectly in the work of the farm through this agency.

MEETINGS.

Addresses by the superintendent were delivered at the following places: Calgary, Vermilion, Brandon, Toronto, Ponoka, Penhold, Edmonton, Red Deer.

He acted as judge of sheep and swine at the Red Deer exhibition, and of swine at the Calgary Industrial Exhibition. Mr. B. C. Milne, assistant to the superintendent, addressed meetings at Craigmyle and Calgary.

EXCURSIONS.

A successful excursion was run to the farm on July 21. Special trains from Calgary, Edmonton, and Coronation brought over 1,200 persons. Addresses were delivered by: Dr. J. G. Rutherford, Chief of Agriculture and Animal Industry, C.P.R., Calgary; Alex. Galbraith, Superintendent of Fairs and Institutes, Edmonton; and H. W. Wood, President of the United Farmers of Alberta. Including the excursion day visitors, about 2,290 people visited the farm during the year.

EXPERIMENTAL STATION, SUMMERLAND, B.C.

REPORT OF THE SUPERINTENDENT, R. H. HELMER.

THE SEASON.

The spring of 1916 was very backward, the cold weather lasting right into early summer; and although the days were warm the nights were cold. Very little rain fell during the growing season. It has been a very unsatisfactory year for dry-farming, and the land was too dry to fall plough. Crops were very late maturing, especially vegetables, and low prices prevailed in consequence.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature.		Rainfall.	Snowfall.
	Highest.	Lowest.		
	°	°	Inches.	Inches.
1916.				
April	72·5	30·0	0·59	
May	82·0	31·0	0·415	
June	95·0	39·0	1·555	
July	87·0	45·0	1·785	
August	93·0	43·0	0·16	
September	87·0	38·0	0·655	
October	69·0	28·0	0·14	
November	53·0	11·0	0·51	0·50
December	45·0	2·0	0·08	10·00
1917.				
January	47·0	−10·0	0·14	2·00
February	43·0	− 2·0	0·03	5·50
March	48·0	9·0	0·15	2·40
Total	.....	.....	6·210	20·4

LIVE STOCK.

Horses.—Seven horses are kept at the Station, two of them being 7-year-old Clydesdale mares. The rations which have been fed are as follows: Oats and bran, 5 parts to 1, 15 to 18 pounds per day; chopped hay, 10 to 12 pounds per day. All the horses are in good condition.

Cattle.—Forty-one head of steers are under feeding tests at the close of the year on rations consisting of varying quantities of hay and straw, oat chop, cracked corn, and oil-cake meal.

BEES.

Two colonies of Italians were purchased locally and a start made with bees at Summerland in the spring of 1916. A swarm was cast by each hive, but as both were weak they were united. The total honey crop amounted to 70 pounds, and was sold at 15 cents a pound. The three hives were wintered in outdoor wintering cases.

FIELD HUSBANDRY.

All the land cleared during the winter of 1915 was well worked up with a spring-tooth cultivator, and harrowed well for seeding to oats and alfalfa. This land is very sandy, and both crops did well, considering the character of the soil. All the fall ploughing was disced and harrowed as soon as possible, to conserve moisture.

Crop Yields.—Oats gave good yields, one field of Banner producing 75 bushels per acre, the best sample weighing 42 pounds to the measured bushel. Corn grew well, and all varieties ripened before frost came. Clover and alfalfa were disced and harrowed early in the spring and re-marked for irrigation. All land newly seeded to hay made satisfactory growth.

CEREALS.

Five varieties of wheat were tested, the yields ranging from 10 bushels 37 pounds to 22 bushels 30 pounds per acre. The oat yields were from 31 bushels to 41 bushels 6 pounds per acre, and the barley from 25 bushels 25 pounds to 29 bushels 20 pounds per acre. On the dry farm, Kharkov wheat yielded 5 bushels 39 pounds per acre, Shirka wheat, 3 bushels 48 pounds per acre; fall rye, 6 bushels 6 pounds per acre; and spring oats, 13 bushels 26 pounds per acre.

FORAGE PLANTS.

Indian Corn.—All varieties of corn matured, the yields varying from 3 tons 1,300 pounds to 10 tons 1,500 pounds per acre, Longfellow giving the latter yield. The land used for the experiments was not able to hold the water applied to it satisfactorily, and this fact would lower the yield.

Roots.—The average yield of the twenty varieties of turnips tested was 7 tons 895 pounds per acre. A spraying and fertilizing experiment with turnips seemed to show that spraying, especially in combination with fertilizers, has a decidedly favourable effect on the yield. Fifteen varieties of mangels gave an average return of 18 tons 1,543 pounds per acre. Experiments in depth of cultivation of mangels showed a marked advantage in deeper cultivation. In the experiment in which home-grown and commercial mangel seed were compared the results were very much in favour of the home-grown seed, both in yield and quality. Five varieties of carrots and three of sugar beets were also tested.

Grasses and Clovers.—The variety tests for hay gave very poor results this year. The only grasses cut were timothy, western rye, meadow fescue, alfalfa, and red clover. Four crops of Soudan grass were added this year, and made strong growth.

HORTICULTURE.

Fruits.—A commercial orchard of twelve varieties of apples was planted, and an experimental orchard containing two trees each of twenty-eight varieties, in all 1,422 trees. The other trees planted were 112 peach, 84 cherry, 66 pear, 107 apricot, and 164 plum and prune. Owing to the lateness of the season the trees did not arrive as early as expected and had suffered more or less from the severe winter in storage, so that the trees that had remained in the ground all winter grew the best. The following numbers of trees died: apple, 107; peach, 42; cherry, 40; pear, 7; apricot, 17, and plum and prune, 25. A number of small fruit bushes were planted in the spring of 1916, and these have made a fairly good start.

Vegetables.—Many varieties of vegetables were tested this year to determine their relative productiveness, earliness, and quality. Two large plots, half an acre

each, of Gold Coin and Irish Cobbler potatoes were grown. The half-acre plot of Gold Coin produced 4 tons 600 pounds of marketable potatoes, the Irish Cobbler plot, 4 tons 400 pounds.

Ornamental gardening.—A system of pipes from the domestic system was installed in the spring for the flower beds, and this will also water the lawns. The flowers made a good showing this summer, the roses being especially good for the first season. Preparations were made during the fall for lawns this year.

FARM IMPROVEMENTS.

Buildings.—Four cattle sheds, 16 feet by 28 feet, with yards 28 feet by 70 feet were built in the fall. Water from the domestic pipe line was brought to troughs in the yards, and roads were built. A root-cellar of logs was built into the bank, and a feed-room put at one corner of the root-house, with chutes leading to the root-pulper boxes; and a shed was put up to house the separator. The stables were lined with shiplap, and have been much more comfortable for the horses this winter.

Irrigation.—Before any water was turned into the system it was examined carefully, and when the water was admitted everything was in good order. Only one leak in the syphon pipe was found, and this was stopped by tightening the joint. Measuring boxes were installed in the flumes serving the orchards and where plot work is to be carried on. These boxes cost from $25 to $30 each according to size. Where needed, flumes to the various orchards and vegetable gardens were installed. A lot of work levelling the orchards was done in order that more uniform irrigation might be given. All this work was done by home-made tools; the grader cost $12, and the float $5. Cutting off the small hills and filling the hollows in the land pays for itself the first year in ease of irrigation, more uniform distribution of water, and better yields. The water was turned on April 25. A good supply of water was available this season, but more will be needed when all the sandy land comes under cultivation.

The municipal dam was opened for the first time on the 15th of August. All water was turned off on September 22. The syphon pipe, when running full capacity, can supply the amount of water contracted for, and has proved very satisfactory. A system of pipes was run from the main domestic line to the flower garden and lawns. This is laid so that it can be drained in the fall. The pressure on this system is now very good.

Roads.—The new grade from the Penticton road to the benches has been finished and gravelled; also the grades to the upper benches. These have been graded and gravelled, and make a big improvement to the heavy sand hills. Many other grades have been improved and widened, and some new roads made where they were needed.

Machinery.—Machinery to the value of $1,374.25 was purchased at this Station during the season, and consisted of a gasoline engine and separator, binder, feed grinders, fanning-mill, root pulper, cultivators, and platform scales.

EXHIBITIONS.

This station had an exhibit at the fall fairs at Kamloops, Kelowna, Armstrong, Naramata, Summerland and Penticton Poultry Show.

MEETINGS.

The superintendent attended the following conventions, meetings and shows: The British Columbia Fruit Growers' Association Convention (summer meeting) at Penticton; the Western Canada Irrigation Association convention at Kamloops; the British

Columbia Fruit Growers' Association convention, Victoria; the British Columbia Stock Breeders' Association convention, Victoria; the United Farmers of British Columbia meeting, Victoria; the Women's Institute flower show; the Armstrong seed fair; Farmers' Institute meetings at Vernon, Armstrong, Naramata and Summerland.

EXCURSIONS.

This year a marked increase of visitors to the Station has been noticed, and farmers in towns nearby are organizing picnics for the coming year. One Farmers' Institute across the lake has given notification that they wish to come when land is being prepared for seed, during the growing season, and during the harvest.

EXPERIMENTAL STATION, INVERMERE, B.C.

REPORT OF THE SUPERINTENDENT, G. E. PARHAM.

SEASONAL NOTES.

The season of 1916-17 was on the whole, a favourable one. The spring opened later than usual, and it was not possible to commence ploughing until March 28 and seeding was not begun until the last week in April, a full fortnight later than the previous season.

Much of the clover was winter-killed and had to be reseeded. The spring was cold and backward, with light precipitation until the end of May. During the second week in June there was a very sudden rise in temperature, which was most beneficial to the crops. This sudden change caused a very rapid rise in the mountain streams, and flood conditions caused grave anxiety in the district. The low lands adjacent to the poultry grounds, partly sown to alfalfa and partly devoted to forage-plant test plots, was flooded and destroyed by the swift water. There were no destructive frosts during the growing season, and garden crops and bush fruits did well. The apple orchard was practically destroyed by the severe winter, coupled with high winds which removed the natural snow protection.

The precipitation during June and July was above the average, and aided by the warm weather, hastened the development of crops which, earlier in the season, had been very backward.

The first grain was cut on August 15. The yield in cereals was fair, and the sample good. The fall was favourable for conducting the work of that season, and winter set in on November 10.

During the winter there was a light snowfall and equable temperatures appropriate to the season, but remarkably free from storms so that the snow did not drift to any great extent, and there was a reasonable prospect that fruit trees, clover, etc., would prove to have wintered well. The sun had considerable power in the middle of the day but temperatures at night during the last week of March were close around zero.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Maximum Temperature.		Minimum Temperature.		Precipitation.			Sunshine.
	Date.	Degree	Date.	Degree.	Rain.	Snow.	Total.	Hours.
1916.					Ins.	Ins.	Ins.	
April	26	76	23	21	0·62	.....	0·62	182·5
May	4	71	11	26	2·89	.....	2·89	179·1
June	18	88	7	34	2·01	.....	2·01	202·0
July	31	88	23	39	2·32	.....	2·32	271·1
August	27	84	4	37	2·01	.....	2·01	269·0
September	1	77	28	24	1·15	.....	1·15	192·2
October	16	67	4	20	0·54	.....	0·54	159·2
November	1	47	12	−12	0·08	2·5	0·33	84·6
December	2	39	27	−31	.....	3·0	0·3	84·4
1917.								
January	9	40	31	−25	.....	1·5	0·15	80·1
February	12	44	1	−26	.....	3·6	0·36	99·8
March	5	42	1	− 8	.....	1·8	0·18	143·7
Totals	.....	.....	.....	.....	11·62	12·4	12·86	1,947·7

POULTRY.

The stock at this Station consists of Barred Rocks, Light Sussex, and S. C. Leghorns. Barred Rock and S. C. Leghorn pullets were compared as to egg production and cost of feed consumed, the highest individual records in the two breeds being: Barred Rocks, 178 eggs; S. C. Leghorns, 145 eggs. For artificial incubation three makes of incubator were used. Fattening tests were conducted with six birds each of the Light Sussex and Barred Rock breeds, the six Barred Rocks making an increase of 5 pounds 8 ounces in live weight between November 10 and December 18, while the six Light Sussex birds made an increase of 5 pounds 14½ ounces in the same period. Results obtained from a number of Barred Rocks, each weighing, on the average, 5 pounds live weight, showed that the average loss from live weight to dead weight was 9½ ounces, and the average loss from dead weight to weight when drawn, 14½ ounces.

A great deal of clearing work was done on the slope to the south side of the poultry grounds, and the increased amount of sunlight caused a marked improvement in the health and vigour of the birds.

BEES.

Eleven colonies were placed in winter quarters in 1915, five in the cellar, and six outdoors. Of the five in the cellar one was found to be dead when the spring examination took place. Two hives wintered in double packing cases outside came through in ideal condition, but of the other four wintered outside only two survived, and these in only fair condition.

The season was very favourable, and the bees gathered a large quantity of honey of good quality, averaging nearly 100 pounds to the colony, the strongest colony gathering 262 pounds during July and August. The total honey crop amounted to 935 pounds, and found a ready sale at 20 cents per pound.

The eight colonies were increased to twelve by division during the year, and in the fall of 1916, six of these colonies were put in winter quarters in the cellar, two

of the others were left in the open protected by a 4-inch packing in a double packing case, while the remaining four hives were placed in a trench dug into a bank 18 inches deep, and covered with straw and earth.

FIELD HUSBANDRY.

Rotations.—The rotations being tested on this Station are as follows:—

Rotation "A," four years' duration (hoed crop, wheat, peas, oats).

Rotation "B," five years' duration (wheat, roots, oats seeded down, clover, clover).

Rotation "C," oats continuously: This rotation has been modified, and it is proposed to grow fields of oats side by side with the following cultural preparation: (1) oats continuously; (2) oats continuously on land treated each fall with a dressing of barnyard manure; (3) oats growing continuously with clover seeded therewith, the same to be ploughed under for the succeeding crop; (4) oats and summer-fallow alternate years.

Rotation "D," six years' duration (summer-fallow, wheat, peas and oats, summer-fallow, roots, barley).

Rotation "T," three years' duration (oats, clover, potatoes).

Crop Yields.—Wheat on rotation "A" yielded 27·7 bushels per acre; on rotation "B," 31·5 bushels per acre; and on rotation "D," 27·4 bushels per acre. Oats on rotation "A" gave 63·5 bushels per acre; on "B," 60·9 bushels; and on "C," 48·8 bushels. Barley yielded 21 bushels per acre, and roots on rotation "B," 13 tons per acre.

CEREALS.

Three varieties of spring wheat, Huron, Marquis, and Pioneer were tested, and gave yields of 38 bushels, 34 bushels 40 pounds, and 22 bushels 20 pounds, respectively. Banner oats proved superior to Victory and Ligowo, giving a yield of 125 bushels 10 pounds per acre; while Gold proved the best of the four barleys tested, yielding 86 bushels 12 pounds per acre, and Chancellor, the best variety of peas, gave 43 bushels per acre.

FORAGE PLANTS.

Indian Corn.—Twelve varieties of corn for ensilage were again tested, but all were frosted before reaching the best stage for cutting. Salzer's North Dakota gave the highest yield, 10 tons 1,200 pounds per acre.

Roots.—Variety tests were continued with mangels, turnips, carrots, and sugar-beets. The mangels were entirely destroyed by cutworms. Of the turnips, Mammoth Imperial Greystone gave a yield of 24 tons 600 pounds per acre, the average yield of the seventeen varieties tested being 13 tons 1,009 pounds. Improved Short White was the best variety of carrot, giving a yield of 7 tons 1,200 pounds per acre, the average for the five varieties being 6 tons 680 pounds. Canadian-grown seed proved superior to two other imported varieties of sugar beets tested.

Grasses and Clovers.—Clover was in many cases winter-killed, and the new crop sown to replace the losses suffered a good deal from cutworms. Alfalfa produced two good crops, and sainfoin also produced two crops and did well on light, dry land which was unsuitable for alfalfa or clover. Alfalfa, alsike, meadow fescue, sainfoin, western rye, red clover, and orchard grass were sown in plots of one-thirtieth of an acre each for seed.

HORTICULTURE.

Fruits.—A large number of apple trees were winter-killed, the only varieties surviving being crabs, and some trees of the Wealthy, Duchess, and Yellow Transparent varieties. Bush fruits suffered considerably from winter injury, particularly

raspberries and black currants. Of the gooseberries, Oregon Champion, the only variety which has proved immune from mildew, again made good growth and yielded a heavy crop.

Vegetables.—The variety tests and cultural experiments with a number of vegetables were carried on as in previous years.

Ornamental Gardening.—Attractive additions were made to the ornamental grounds by levelling and laying out of further lawns around the house. Annual and perennial flowers were grown, and aster, antirrhinums and sweet peas particularly made a very fine showing.

BUILDINGS.

A new permanent poultry house, 16 feet by 16 feet, on a concrete foundation, was built during the season.

EXHIBITIONS.

An exhibition was again sent out and fairs, besides that of the Windermere district (held on the Station grounds), were attended at Natal, Golden Trail, Nelson, and Needles. There is a continual increase in the correspondence between this Station and farmers in all parts of the Kootenays, who have been brought to a knowledge of the Station and its work by the exhibitions of the past two years.

MEETINGS.

In July the superintendent attended the Irrigation Convention held at Kamloops. In September he attended the Needles Fair, and visited a number of ranchers in the Fire valley. In October he visited many ranches in the Cranbrook district. In February, meetings of the British Columbia Fruit Growers, and British Columbia Live Stock Associations were attended at Victoria, as well as the inaugural meeting of the United Farmers of British Columbia.

VISITORS.

A larger number of visitors were received at the Station than in any previous year, many taking advantage of the fall fair, held on the Station grounds, in September, and manifesting interest in the work being done in the various departments.

EXPERIMENTAL FARM, AGASSIZ, B.C.

REPORT OF W. H. HICKS, B.S.A., OFFICER-IN-CHARGE.

THE SEASON.

The spring of 1916 was one of the most backward since the Farm was established. The weather for May was a continuation of the wet, cool weather experienced in April; and although there was no frost that month, the temperature dropped to two degrees of frost on one occasion in May. The cool, cloudy weather in June was followed by a very wet July. August was almost all that could be desired. It was the brightest month of the year, with less than an inch of rainfall. September was reasonably fine, and, although there was very little precipitation, there was considerable cloudy and foggy weather. October was dry, followed by a fairly normal November and a winter with somewhat more snow than usual.

The cool, wet spring of the past season kept all the crops behind, but the abundant rainfall during the entire growing season resulted in good yields of root, grain, and hay

crops. The corn was very slow in growth until August, when it made very rapid progress and yielded a fair crop.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Maximum Temperature.		Minimum Temperature.		Precipitation.			Sunshine.
	Date.	Degree	Date.	Degree	Rain.	Snow.	Total.	Hours.
1916.					Ins.	Ins.	Ins.	
April	26	69	16	34	6·3	.....	6·3	91·8
May	24	76	7	30	4·98	.....	4·98	164·2
June	17	88	2	42	2·68	.....	2·68	177·5
July	30	86	6	42	4·67	.....	4·67	106·3
August	24	95	23	42	0·98	.....	0·98	227·3
September	16	83	29	35	1·68	.....	1·68	142·3
October	9	73	20	29	1·76	.....	1·76	137·1
November	6	56	12	25	7·83	.....	7·83	79·1
December	1	45	23	16	4·32	24·0	6·72	22·0
1917.								
January	8	48	31	−1	6·85	32·5	10·1	43·5
February	13	52	1	8	2·62	23·0	4·92	81·7
March	26	56	1	12	4·7	9·0	5·6	103·3
					49·37	88·5	58·22	1,376·1

LIVE STOCK.

Horses.—The horses on this Farm are kept only for working purposes, and no breeding or experimental work with them has yet been done. Records are kept of the number of hours' work done by each horse, and the amount of feed consumed. The average feed cost per hour's work done by the heavy-draught horses was 5·04 cents, and of the light-draught horses, 4·5 cents. During the twelve months each horse averaged 190 working days of ten hours each. Two old geldings were disposed of during the year, and a young team of heavy-draught geldings was purchased to replace them.

Cattle.—The Holstein herd of dairy cattle has made a creditable showing during the past year. The breeding work has been continued with the same objects as hitherto. Records are kept of all feeds used, and reports on the production and cost thereof for each cow made. In the experimental feeding of different kinds of silage, clover, and peas and oats have demonstrated their suitability as substitutes for corn in milk and butter production. The health of the cattle has been good. Two tests for tuberculosis failed to detect a reaction. This makes the fourth successive year that the herd has been free from this disease.

An Empire milking machine was installed in November, and is giving good satisfaction. No trouble has been experienced with sore teats. No experimental work has yet been done in comparing this system of milking with the hand method.

During the year approximately eight hundred Stilton cheeses have been manufactured and sold at an average price of 34 cents per pound. A large amount of cream cheese has also been made. Milk testing of composite samples from the Farm herd has been done weekly, also a considerable number of milk and cream samples were tested for farmers in the province.

Sheep.—The flock is considerably larger than it has ever been before. It consists of 67 sheep and 49 lambs, with somewhat more than half of these pure-bred Horned

Dorsets. The winter just past has been one of the most expensive in the history of the Farm in the maintenance of sheep. They were stabled on November 16, and from then until March 31 obtained very little pasture. The average amount of feed consumed per head during that period cost $3·46.

A grading experiment is being carried on here, using Dorset Horned rams on smaller, dark-faced, hornless, grade ewes. The Dorset type becomes more pronounced as each cross is made. Seventy per cent of the second-cross animals retained on the Farm have horns, and 80 per cent of them have white faces. Four feeding trials with lambs on fall pasture indicated: First, that it did not pay to feed grain to lambs on good clover or rape pasture; and second, that lambs on rape pasture made more rapid gains than those on clover pasture, both when grain was fed and when the lambs were only allowed pasture.

Swine.—The swine kept on this Farm are of the Yorkshire breed. The breeding herd is housed in A-shaped cabins in the bush on unproductive land. Previous to farrowing, the sows are placed in the piggery, where special attention is given them until the young pigs are strong and active. The best of the young animals are sold for breeding purposes or retained in the herd, while the poorer ones are used for experimental feeding. During the past year eleven males and forty-one females were sold for breeding purposes. The average number of pigs farrowed per sow was 12·07, of which 73·98 per cent were raised. On account of the high price of feed the cost of raising young sows to breeding age was $6.01, somewhat higher than in previous years.

POULTRY.

The stock kept consists of Barred Plymouth Rocks, Single Comb White Leghorns, White Pekin ducks, and Homer pigeons. Approximately four hundred mature birds, exclusive of pigeons, were carried over the year. During the spring, from 3,362 eggs 1,553 chickens were hatched, or 52·6 per cent of the fertile eggs. Some custom hatching was also done, with moderately successful results. Five makes of incubator were used, and it was found that the Candee coal-burning one cost 42 cents per 100 eggs, and the Cyphers oil-burner, 35·6 cents.

Accurate records were kept of all pens in regard to number of eggs laid and amounts of feed consumed. The pullets of each breed started to lay in September. Experiments conducted in fattening birds for market demonstrated the superiority of the crate over the pen-feeding method.

Thirty White Pekin ducks were kept from 1915, and from these 171 ducklings were raised. The breeding stock was cut down to twelve ducks and five drakes in the spring of 1917.

BEES.

Four colonies were on hand in the spring of 1916. In early summer one of these became queenless, and was united with another weak colony. Three new swarms were hived during the season: and, the whole apiary becoming queenless, six new Italian queens were imported from Kentucky and successfully introduced. The heavy precipitation in June and July rendered the season an unfavourable one for honey production; only 90 pounds of extracted honey being obtained. The receipts from the honey just paid for the sugar fed and the six queens purchased.

FIELD HUSBANDRY.

Rotations.—The four-year rotation carried on at Agassiz has continued to give good results. In the four years of the rotation the following crops are grown: First year, hoed crop, corn or roots; second year, grain seeded down; third year, hay; fourth year, pasture.

Crop yields.—The following table shows the amounts of each crop grown in 1916:—

Crop.	Yield.	
	tons	lb.
Corn silage	327	140
Clover silage	159	1,954
Pea and Oat silage	91	730
Mangels	178	1,330
Carrots	6	400
Sugar beets	2	
Potatoes	4	800
Clover hay	21	780
Pea and Oat hay	28	190
Mixed grain (peas, oats, and barley)	20	1,600
Oats	3	1,200
Peas	1	1,720
Barley	1	

Cultural experiments.—One hundred and forty-six plots are used for cultural investigation work, the main experiments carried on being to determine: (1) The best method of preparing land for hoed crops; (2) the best seasons for applying barnyard manure; (3) methods of applying chemical fertilizers to mangels; (4) the best after-harvest cultivation of root land in preparation for a grain crop to be seeded with clover.

FERTILIZER EXPERIMENTS.

Sixty-five permanent plots are set for this work. They were seeded down to a grass-and-clover mixture, using oats as a nurse crop. One experiment endeavours to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profit, some plots receiving the fertilizer elements in combinations of two, while others received the complete fertilizer. Another experiment is to find the relative efficiency of nitrate of soda and sulphate of ammonia as sources of nitrogen; and acid phosphate, basic slag and bone meal as sources of phosphoric acid.

CEREALS.

The usual tests of varieties of grain crops were conducted on uniform plots. Among six varieties of wheat, Huron gave the highest yield, but, calculating on a five-year average, Marquis has demonstrated its superiority. Of the sixteen varieties of oats, Banner is still at the top of the list. Eighty Day gave the best yield of the early varieties. Tests of barley show that the two-row varieties are superior to six-row for this district. Beaver is the best average yielder of the two-row varieties for five years. Solo is the heaviest yielding variety of peas grown.

FORAGE CROPS.

Indian Corn.—Eighteen varieties of corn were tested in one-hundredth acre plots. Six varieties which had proven succesful in former years were tested in half-acre plots. Of the eighteen varieties first mentioned, Bailey proved the highest yielder, with 20 tons 400 pounds per acre; and of the six varieties tested on half-acre plots, Golden Glow was the highest, with 19 tons 1,650 pounds per acre.

Roots.—Sixteen varieties of mangels, five of carrots, and three of sugar beets were grown in duplicate test plots. Tankard Cream gave the best yield among the mangels, Improved Short White among the carrots, and Italian-grown beet seed proved superior to the other varieties. A number of varieties of turnips were tested, but were so vigorously attacked by flea-beetles that the crop was completely destroyed. Some work in the production of mangel seed was also carried on.

Grasses and Clovers.—Twenty plots sown to different varieties of clover in 1915 gave good results. Six plots were sown, at different rates per acre, to Grimm's alfalfa on limed and inoculated soil, the plot sown at the highest rate, 60 pounds per acre, giving the best returns.

HORTICULTURE.

Fruits.—The young orchard is doing well and should be in condition to bear a fairly good crop in 1917. The small fruits, with the exception of strawberries, all yielded well, and the fruit was of good quality.

Vegetables.—Many useful tests, both as to varieties and cultural methods, were carried on with vegetables, and the experiments in the various ways of planting and cultivating potatoes were carried on as a continuation of last season's work.

Ornamental Gardening.—Among the flowers a number of variety tests were made and seed saved. Roses and sweet peas were excellent, and the perennial border was a brilliant show of colour throughout the summer. Many of the flowering shrubs and trees were severely damaged by cold winds in the winter and early spring, more particularly rhododendrons, which were almost a total failure.

FARM IMPROVEMENTS.

Buildings.—There was considerable work done on buildings this past year. A new foundation was placed under the foreman's house, and new floors and underpinning added. The old piggery building was converted into a bull stable, with three roomy pens and a corresponding number of yards, surrounded by a high board fence. This equipment added greatly to the ease with which cross and quick-tempered bulls may be handled. The feed mixing and weighing room in the dairy barn was remodelled and enlarged. A shed, 14 feet wide, was added to the south side and east end of the sheep barn, and the entire building painted.

Water Supply.—The main water supply for the Farm comes from a cement tank on the side of the mountain, which is filled by a small stream. Occasionally in dry weather during the summer this system fails. Last year a good well was dug on the level, and a wooden tower with tank on top was erected. A centrifugal pump, driven by a gasoline engine, supplies the means of filling the tank. This makes a very complete water system.

Fencing.—Fifty-five rods of wire fence, with square cedar posts, was placed around a triangular piece of ground for use as a permanent calf pasture. One hundred rods of old fence was removed and partially replaced by a new one. Sixty rods of chicken wire fence was erected for the poultry department.

Clearing.—Five acres on the east side of the Farm were cleared at odd times throughout the season. Seven additional acres were underbrushed and seeded to grass and clover for sheep pasture during the approaching summer.

EXHIBITIONS.

A travelling exhibit from the Agassiz Experimental Farm was staged at the following fairs: Vancouver, Chilliwack, Langley, and Maple Ridge. At each place much interest and appreciation were shown. The exhibit has, no doubt, been the means of causing a great many inquiries for information on agricultural subjects.

MEETINGS.

Besides the four fairs mentioned above, the superintendent, or his representative, attended the following meetings: Poisonous Weed Investigation, Kamloops; Western Canada Irrigation Association, Kamloops; Beekeepers' Convention, Vancouver; Live Stock Conference, Victoria; Dairymen's Convention, Nanaimo.

VISITORS.

It is estimated that about 1,100 persons visited the Farm during the year.

EXPERIMENTAL STATION, SIDNEY, B.C.

REPORT OF THE SUPERINTENDENT, L. STEVENSON, B.S.A., M.S.

SEASONAL NOTES.

The spring of 1916 opened very late, wet, cool weather prevailing until the last day of April, making seeding operations four weeks later than usual. Excessive drought prevailed during June, July, August, and September, creating conditions of soil dryness which hindered the development of spring-sown crops, and made soil tillage difficult. The dry summer conditions again emphasized the necessity of increased attention to autumn-sown crops, crops that will make some growth during the winter and complete development and ripening before the dry period commences in July.

METEOROLOGICAL RECORDS, 1916-17.

Month.	Temperature F.		Precipitation.			Total Sunshine.
	Highest.	Lowest.	Rainfall.	Snowfall.	Total.	
	°	°	Inches.	Inches.	Inches.	Hours.
1916.						
April	61·0	32·0	1·52	.....	1·52	155·6
May	74·0	32·0	0·73	.....	0·73	251·9
June	83·0	40·0	0·55	.....	0·55	270·5
July	81·0	46·0	1·72	.....	1·72	220·9
August	85·0	47·0	0·32	.....	0·32	306
September	72·0	39·0	0·66	.....	0·66	195·4
October	64·0	35·0	2·01	.....	2·01	145
November	56·0	28·0	3·18	.....	3·18	103·9
December	48·5	23·5	5·74	8·50	6·59	31·4
1917.						
January	49·0	9·0	2·45	16·25	4·07	57·6
February	48·0	19·0	1·59	13·84	2·97	41·8
March	49·0	24·0	2·72	.....	2·72	131·6
Total for the year	.....	.....	23·19	38·59	27·04	1,911·6

LIVE STOCK.

Horses.—Only work geldings are kept at this Station. These received the following daily ration from April 1 to October 31: 1 pound crushed oats, 4 ounces wheat bran, and 1 pound mixed hay per hundred-pound live weight of horse. From November 1 to March 31 the grain ration remained the same, but rye hay was substituted for mixed hay, and, in addition, each horse received 3 pounds of carrots per day.

Cattle.—The Jersey herd from Lacombe, consisting of a bull and nine females of various ages, was established on the Sidney Station in December, 1916. These cattle have now become used to the climatic conditions, and have improved considerably.

POULTRY.

Four flocks of chicks were purchased in April and May. These were fed up to eight weeks old at a cost of 9·5 cents each. Out of 1,050 chicks purchased, 424 died during the first eight weeks. The chicks were raised in a portable brooder house, heated by a Simplex oil burner brooder stove. The cost of heating this house, which accommodated 750 chicks, amounted to 2·9 cents per chick for a period of twenty-eight days. An experiment to determine the value of milk albumen as a substitute for skim-milk in chicken fattening was carried on. The cost of 1 pound gain with birds fed skim-milk was 8·9 cents, while when milk albumen was substituted the cost of 1 pound gain was 15 cents. Thirty cockerels were caponized at three months old, and when eight months old weighed, on an average, 8 pounds 2 ounces each. They were sold at $2.43 each, realizing a net profit of 91¼ cents per bird.

The average cost to feed a White Wyandotte pullet to five months old was found to be 45¾ cents; and to feed a cockerel to eight months old, $1.15.

Fifty-two pullets, hatched April 1, in six fall and winter months laid 5,341 eggs at a feed cost of 13·6 cents per dozen; while fifty-three pullets, hatched May 1, in the same period laid 4,020 eggs at a feed cost of 14·5 cents per dozen. All birds were trap-nested.

BEES.

The work with bees has been continued, with no marked improvement in production of honey. Bee pasture is not sufficiently abundant in the forested districts to make bee-keeping a very profitable business. The net return per hive for the past three years has been under 10 pounds per annum.

FIELD HUSBANDRY.

Rotations.—The main farm rotation at this Station is a three-year one and is carried on on two plots of 18 acres each. On one plot the rotation years are wheat, clover, corn; on the other plot, oats and peas, clover, corn. Manure is applied every third year. This rotation ensures an abundance of fodder for the stock, reduces the cost of crop production, maintains soil fertility and checks weeds.

A three-year rotation, consisting of corn or roots, grain, clover or other legume is also carried on in connection with the cereal and fertilizer work.

Crop yields.—Twelve acres were sown to Banner oats, and yielded 52 bushels per acre at a cost of 46 cents per bushel. Five acres under fertilizer experiment, sown to Garton oats, gave a yield of 47 bushels per acre at a cost of 48 cents per bushel. This high cost was largely due to the cost of removing stones and roots from the fields before seeding.

Six acres of Canada white field peas yielded at the rate of 22 bushels per acre, and one and a half acres of Solo peas, 29 bushels per acre, the cost of production of the

Canada White peas being $1.25 per bushel, and of the Solo variety, 94 cents per bushel.

Rye, oat, and pea and clover hay gave a total yield of 70 tons 700 pounds.

FERTILIZER EXPERIMENTS.

In an experiment to ascertain the quantity and proportionate composition of a fertilizer which will yield the greatest profit, different plots received applications of fertilizing elements singly or in combinations of two, while other plots received a complete fertilizer. Another experiment was carried on to discover the most efficient sources of nitrogen and phosphoric acid. Here different plots received applications of various amounts of nitrate of soda or sulphate of ammonia as sources of nitrogen, and of acid phosphate, basic slag, or bone meal as sources of phosphoric acid.

CEREALS.

Twelve varieties of winter wheat were sown on September 16. Saanich gave the best yield of 59 bushels 30 pounds per acre. Four varieties of autumn rye, also sown September 16, gave yields varying from 1,845 pounds to 2,160 pounds per acre, Thousandfold giving the latter. Tapp's Winter gave better returns than Arlington Awnless, the other winter barley tested. Two of the four varieties of winter oats under test winter-killed and, of the remaining two, Winter Turf gave a greater yield than Fulghum. Of the seven varieties of spring wheat, Wild Goose gave the highest yield; and of the eight varieties of spring barley, O.A.C. No. 21 was the best. Three varieties of field beans and three of lupins were also grown. Two varieties of tares and three of vetches were seeded, and all made satisfactory growth. Of the eleven varieties of peas tried, Solo proved the heaviest yielder, and of the nine varieties of oats, several of these being new varieties obtained from New Zealand, Banner again headed the list.

FORAGE PLANTS.

Indian Corn.—Nineteen varieties of corn were tested for fodder production, and gave an average yield of 5 tons 1,885 pounds per acre, Stowell's Evergreen heading the list with 11 tons 1,725 pounds per acre. All flint varieties and four of the dent varieties ripened.

A number of crosses were made with a view to obtaining an early-maturing, heavy, grain-yielding ensilage corn and a heavy-yielding high-quality fodder corn.

Roots.—Five varieties of swede turnips gave an average yield of 17 tons 880 pounds per acre, the highest yielder, Mammoth Clyde, giving 18 tons 1,550 pounds per acre. Of the twelve varieties of mangels, Giant Yellow Globe, the highest yielder, gave 15 tons 300 pounds per acre, the average yield per acre being 12 tons 1,767 pounds. Ontario Champion proved the best of the five varieties of carrots tested, yielding 21 tons 1,050 pounds per acre. Three varieties of sugar beets were tested, and a comparison between home-grown and commercial mangel seed showed the superiority of the former.

Grasses and Clovers.—Three cuttings were taken from the Canadian Variegated alfalfa. Four varieties of millet and three varieties of feeding kale were also tested.

HORTICULTURE.

Fruits.—The orchards established during the past three years have developed very satisfactorily. Small quantities of apples, plums, pears, cherries, filberts, quinces, and medlars were obtained. Various spraying experiments were carried on, and a test of

a home-made tobacco solution made. The experimental nut orchard occupies 6 acres, but all the trees are young.

The production of small fruits was below the average of previous years; white, black, and red currants, raspberries, gooseberries, blackberries, strawberries, and grapes being grown. A number of trees were imported from foreign countries, and tested.

Vegetables.—A number of variety and cultural tests were carried on with vegetables, and considerable work was accomplished during the season in vegetable seed production.

Ornamental Gardening.—Variety tests with annual and perennial flowers and bulbs were carried on, and considerable attention was given to an investigation of the possibilities of flower seed and bulb growing. The arboretum area, consisting of 7½ acres, now contains some four thousand five hundred trees.

BUILDINGS.

A dairy barn 58 feet by 28 feet in size, and of a design suited to Vancouver Island conditions, was erected during the autumn. A silo, 10 feet in diameter and 30 feet high, was built of fir staves. A bull pen, 14 feet by 14 feet, and a manure shed, 14 feet by 20 feet, were built in suitable design and at very small cost. Two permanent hen houses and five small colony houses for poultry completed the building operations for the year.

FARM IMPROVEMENTS.

A 4-ton weight scale was installed on a suitable cement foundation.

Electric light and power lines were erected to convey electric current to the dairy barn and poultry buildings.

The roads have been improved by gravel, and short additions have been added where needed.

Wire fencing to enclose cattle and poultry areas has been erected.

A great deal of landscape planting was done during the winter and spring.

EXHIBITIONS.

The following exhibitions were attended, and an educational exhibit set up at each: South Saanich Women's Institute flower show, West Saanich Women's Institute flower show, Parksville Agricultural Society autumn fair, Alberni Agricultural Society autumn fair, Ladysmith Agricultural Society autumn fair, Cowichan Agricultural Society autumn fair, North and South Saanich Agricultural Society autumn fair, and the provincial seed fair at New Westminster. A permanent exhibit has been maintained in Victoria.

MEETINGS.

The superintendent attended the South Saanich Flower Show and the West Saanich Flower Show as judge of flower exhibits, the Vancouver Exhibition, the Cowichan Agricultural Society fair at Duncan, the Alberni, the Parksville, and the Ladysmith fairs as judge of live stock.

The following Institutes, Growers' Associations, Boards of Trade, and Agricultural Associations held meetings to be addressed by the superintendent of this Station: Metchosin Farmers' Institute, Saanich Farmers' Institute, Sidney Board of Trade and the Seed Growers' Association at Duncan and at Victoria, also at the Provincial Seed Fair held at New Westminster, and the Women's Institutes of West Saanich and South Saanich. All addresses were on some phase of agriculture and production.

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